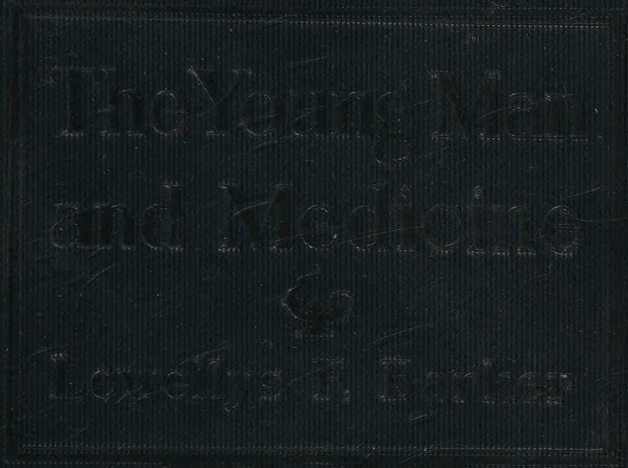
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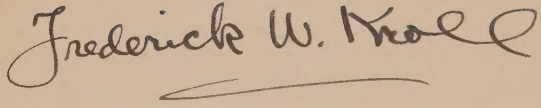

VOCATIONAL SERIES

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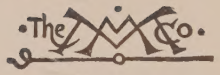
THE YOUNG MAN AND MEDICINE



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THE YOUNG MAN *and* MEDICINE

By

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TO THE
YOUNG MEN IN MEDICINE
WITH WHOM I HAVE HAD
THE PRIVILEGE OF ASSOCIATION
IN CANADA AND IN THE UNITED STATES
THIS BOOK IS
AFFECTIONATELY AND GRATEFULLY DEDICATED.

EDITOR'S PROSPECTUS

One of the most important decisions a young man is called upon to make relates to the determination of his life-work. It is fraught with serious consequence for him. It involves the possibilities of success and failure. The social order is such that he can best realize his ends by the pursuit of a vocation. It unifies his purposes and endeavors—making them count for most in the struggle for existence and for material welfare. It furnishes steady employment at a definite task as against changeable effort and an unstable task. This makes for superior skill and greater efficiency which result in a larger gain to himself and in a more genuine contribution to the economic world.

But a man's vocation relates to a much wider sphere than the economic. It is intimately associated with the totality of his interests. It is in a very real sense the center of most of his relations in life. His intellectual interests are seriously dependent upon his vocational career. Not only does the attainment of skill and efficiency call for the acquisition of knowledge and development of judgment, but the leisure that is so essential to the pursuit of those intellectual ends which are a necessary part of his general culture is, in turn, dependent,

to a considerable extent, upon the skill and efficiency that he acquires in his vocation.

Nor are his social interests less dependent upon his life-work. Men pursuing the same calling constitute in a peculiar sense a great fraternity or brotherhood bound together by common interests and aims. These condition much of his social development. His wider social relationships also are dependent, in a large measure, on the success that he attains in his chosen field of labor.

Even his moral and spiritual interests are vitally centered in his vocation. The development of will, the steadying of purpose, the unfolding of ideals, the cultivation of vocational virtues, such as industry, fidelity, order, honesty, prudence, thrift, patience, persistence, courage, self-reliance, etc.—all of this makes tremendously for his moral and spiritual development. The vocationless man, no matter to what class he belongs, suffers a great moral and spiritual disadvantage. His life lacks idealization and is therefore wanting in unity and high moralization. His changeable task, with its changeable efforts, does not afford so good an opportunity for the development of the economic and social virtues as that afforded the man who pursues a definite life-work. It lacks also that discipline—not only mental, but moral—which the attainment of vocational skill and efficiency involves.

But notwithstanding the important issues involved in a man's vocational career, little has been done in

a practical or systematic way to help our college young men to a wise decision in the determination of their life-work. Commendable efforts are being put forth in our public schools in this direction, but very little, indeed, has been done in this respect in the sphere of higher education. To any one familiar with the struggles of the average college student in his efforts to settle this weighty question for himself, the perplexities, embarrassment, and apparent helplessness are pathetic. This is due largely to his ignorance of the nature of the professions and other vocations which appeal most strongly to the college man. Consequently, he does not know how to estimate his fitness for them. He cannot advise to any extent with his father, because he represents only one vocation. Neither can he advise advantageously with his instructor for he, too, is familiar with the nature of only one profession.

For this reason, a series of books, dealing with the leading vocations, and prepared by men of large ability and experience, capable of giving wise counsel, is a *desideratum*. Such men are competent to explain the nature of the professions and other vocations which they represent, the personal and educational qualifications necessary for a successful pursuit of the same, the advantages and disadvantages, the difficulties and temptations, the opportunities and ideals; thus, in an adequate way, enabling the student to estimate his own fitness for them. They are also able to make valuable sug-

gestions relating to the man's work after he enters upon his vocation.

Fortunately, in the present Series, the Editor has been able to secure the services of some of the most eminent experts in the country to prepare the respective volumes—men of large knowledge and experience, who have attained wide recognition and genuine success in their "callings." It is a pleasure to be able to place at the command of hundreds of thousands of students in our American colleges the wise counsel of such experienced and distinguished men.

The "Vocational Series" will consist of twelve books written by representatives of different vocations, as follows:

1. The Young Man and the Law
   Hon. Simeon E. Baldwin, LL.D., Professor of Law, Emeritus, Yale University, ex-Governor and ex-Chief Justice of Connecticut
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   Rev. Charles R. Brown, D.D., LL.D., Dean of the School of Religion, Yale University
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12. The Young Man and Government Service
    Hon. William Howard Taft, D.C.L., LL.D., ex-President of the United States, and Professor of Law, Yale University

E. Hershey Sneath

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THE YOUNG MAN AND MEDICINE

THE YOUNG MAN AND MEDICINE

CHAPTER I

Decision Regarding a Life-Career

Advantages of early decision. Means of arriving at a vocational decision. Professional and non-professional vocations. The place of medicine among the professions as regards numbers. Aims of the writer in preparing this book.

Decision Regarding a Life-Career.—In the past, people have too often "drifted" into occupations without forethought or plan. Caught in some accidental current, they have found themselves thoughtlessly engaging in a certain kind of work and have continued it. Sometimes, the kind of work undertaken was suitable and the workers were "useful" and "successful". Sometimes, it was unsuitable and the misfit workers were "failures". Such haphazard methods of recruiting occupations were very wasteful of human resources.

Nowadays, more definitely than formerly, young people are being taught the dangers of merely drifting into work. They are urged carefully to survey the various fields of labor, to inquire into the qualifications necessary for successful work in them, and to inform themselves regarding the rewards that

may reasonably be expected from their cultivation. They are advised honestly to attempt to analyze their own native inclinations and capacities—their temperamental tendencies and intellectual powers—and to appraise their social, economic and educational opportunities. Indeed, this estimation of the self and its qualities should precede the examination of the attractions of the various kinds of occupations; the qualities and defects of one's temperament should first be discovered, after which one may sensibly ask what vocation will be suitable, which career will be helped by the qualities and but little interfered with by the defects.

Arrangements are made, too, for consultation with expert vocational counselors to supplement the results of self-analysis and the advice obtainable from parents and teachers. The effort is made to help each young person choosing an occupation to make the most of his interests, his abilities and his opportunities. It is pointed out to them that undiscovered talents and wasted or misapplied energies mean loss not only to individuals but also to society of which they are members. If this loss is to be diminished, young people must not be left to chance in the choice of a calling. They must be stimulated to a consciousness of the desirability of making a deliberate choice, a rational decision, regarding the direction of the work of their lives.

Elders can scarcely do better than to hold before young people the ideal of the highest possible reali-

zation of the self in the worthy service of society. But they must provide, at the same time, adequate information regarding vocations and helpful instruction in the methods of self-discovery and of self-development. The systematic vocational guidance of our youth is coming to be regarded as one of the most important of contemporary social and educational problems.

Advantages of Early Choice of a Suitable Vocation.—Assuming that the choice of vocation made is really suited to the chooser, the earlier in life the decision is arrived at the better. For a vocation that is suitable will be one that is attractive to him who selects it, one that is compatible with his interests, capabilities and opportunities, one that, in a word, he will find to be "congenial". And if this suitable vocation be early discerned, the selector has the inestimable advantage of coming correspondingly early under the impulsion of a most important inducement to earnest and energetic activity, namely, "the motive of the life-career".[1] No student will show greater interest in his school work, will devote himself more enthusiastically to it, or will make more rapid and gratifying progress in it than he who knows that his work is definitely preparing him for some specific vocation that he has chosen.

Nor is this life-career motive a low or unworthy

[1] *Cf.* Eliot (C. W.). The Value During Education of the Life career Motive. Address to the National Education Association, Boston, 1910.

one. On the contrary, it is conducive to the productive power of the worker and enhances his achievement. Thus, it inevitably drives him who is impelled by it to greater social usefulness, and through his successful accomplishment increases his personal satisfaction. Most of us who are older and have gained experience of life will agree with Mr. Eliot when he said: "It is high time that our teachers and leaders of the people understood that every civilized human being gets the larger part of his life training in the occupation through which he earns his livelihood, and that his schooling in youth should invariably be directed to prepare him in the best way for the best permanent occupation of which he is capable. In other words, the motive of his life-career should be brought into play as early and fully as possible."

The successes of the older apprenticeship method in education, despite its obvious drawbacks, were undoubtedly in large part due to the early and uninterrupted influence of the "motive of the life-career". This influence in education was largely lost for industry when the factory system abolished the apprenticeship through which high skill in workmanship was acquired and transmitted. Our captains of industry are now endeavoring to restore a modified apprenticeship system compatible with modern factory organization. The professions, too, while gaining enormously by the systematic education of the university professional schools, miss

much that the older apprenticeship system yielded. Medicine, particularly, has suffered and our best medical educators, cognizant of the lack especially felt since the premedical and preclinical courses have been lengthened, are cudgelling their brains for ways and means to recover the benefits derivable from the apprenticeship system not obtainable under the prevailing educational system. The deficiencies become none the less glaring with the increasing tendency to exclude private practitioners from the faculties of the medical schools. Law, more conservative than medicine, has longer retained a partial apprenticeship method in legal education; but in law, too, as systematic instruction in whole-time schools has become a necessity and as the older apprenticeship system has grown less practicable, educators are confronted with the problem of providing under the new system for what the apprenticeship system gave that the modern law and prelegal educational institutions have not yet discovered the way to supply. In one way or another, methods must be devised, both in industrial and professional education, to secure as early as possible for each recruit the vitalizing influence of the life-career motive.

Means of Arriving at a Vocational Decision.—Ask an ambitious boy of fourteen or fifteen years of age "What are you going to do for a life-work?" and he may tell you at once that he has decided to be an electrical engineer; or he may say that he is going

into business life; or that he has decided to be a surgeon. But such a boy will be an exception; the majority of boys have not yet arrived at a decision regarding a life-career at this age; thus early, only a small proportion are clear in their minds as to the occupations they will follow. In many instances the future occupation remains indeterminate until the young man has reached or passed his majority.

What are the conditions that determine vocational decisions, early or late? They are partly inherited, partly environmental. Natural gifts and tendencies run in families; and one family may produce farmers, another doctors, through several generations. It is, however, not always easy, in such family instances, to separate inherited tendencies from environmental influences. A boy who admires and respects his father and who from childhood up has been familiar with his father's work is often, through imitation, led to follow the same occupation. Again, in certain localities, the predominant occupations—agricultural, manufacturing, commercial—exert a strong influence upon vocational decisions. Impulse and habit, fully as much as thought, determine activities. But boys often desire to do better than their fathers have done; hence if a father has been extraordinarily successful in a given career, his boy may shrink from entering upon the same occupation for fear he may not be as successful in it as his father has been.

Further, the schools are helpful and should be-

come even more serviceable in discerning nascent powers. Thus, parents are often aided by an observant school teacher in the discovery in a pupil of striking capacity for a definite kind of work, and the boy or girl may, accordingly, be led into an appropriate occupation.

A few boys and girls, fortunately, seem to become early and independently conscious of their vocational destiny. And when a young person of ability is very forcibly attracted to a particular occupation, it is usually unwise to try to persuade him to adopt another that is less congenial to his tastes. This is especially true if he shall have had opportunity to become acquainted with the large variety of special activities necessitated by the complexity of modern social life, shall have learned something of their prerequisites, shall have considered carefully the ways in which they are respectively rewarded, and shall have thought over possible difficulties attendant upon their exercise.

Some youths seem to be of a more generalized type, apparently equally suited for any one of a number of worthy occupations but not forcibly attracted to any single one of them. In such instances it would seem wise to advise the continuance of education in a variety of studies, both manual and mental, for a longer period, parents and teachers watching closely for evidences in congeniality of studies for the existence of corresponding capacities. The strongest argument in favor of the elective

system of studies in schools and colleges is that based upon the theory that the studies that most attract a pupil are those that will best prepare him for the occupation in which he could achieve the largest genuine success.

Francis Bacon, to whom the world is indebted for much wise advice, said in one of his essays: "It is true, that if the affection or aptness of the children be extraordinary, then it is good not to cross it", but he believed generally in the precept of Pythagoras, who said: "Choose the best, and custom will make it pleasant and easy."

Wise vocational counselors who know people and the work of the world may often help young men to discovery of their vocational aptitudes and capacities and of the opportunities for social service in which they can best be realized. Inborn gifts are, fortunately, exceedingly variable, and happiness and efficiency depend upon the exercise of talents in a suitable environment. It is of the utmost importance, therefore, both for individuals and for society, that the best ways and means be found to ensure the direction of personal variants toward the occupations that are most appropriate to them.

Professional and Non-Professional Vocations.—The distinction between professional and non-professional vocations is less sharp than formerly, but, on the whole, a thorough general education followed by a prolonged study of the principles of a special branch of knowledge and a special training in its

technical methods of application characterize the preparation for a profession in contrast with the briefer period of general and special education necessary as preparation for a non-professional calling.

It was long customary to recognize only four "learned professions", namely, theology, medicine, law, and teaching, but the list has, in recent times, with the growing complexity of social needs and social organization, been markedly extended. It now includes also architects, engineers, artists, journalists and statesmen. Moreover, each of the professions, instead of having a unitary character, has been manifoldly subdivided and specialized, for the more highly society is organized, the greater the demand for peculiar fitness for special work becomes. Thus, in the medical profession, in addition to general or family practitioners, there are now many members who confine their attention to, and concentrate their efforts in, restricted fields, becoming known as specialists in definite departments. The professions of law, teaching and engineering, similarly, are undergoing an ever-increasing internal differentiation.

The natural endowments required, the long and expensive period of education and technical training necessary, and the postponement of material rewards to a comparatively late period in life, doubtless account for the fact that the proportion of young people choosing professional occupations is small in comparison with the total number of work-

ers. According to the thirteenth census, there were in 1910 some 38,167,336 persons of the age of ten and over engaged in the various occupations, but only 1,663,569 (or about 4 per cent) of these were classified as professional workers, and only 151,132 were physicians and surgeons. The vast majority of workers were engaged in agriculture, in the manufacturing and mechanical industries, and in commerce.

The Place of Medicine Among the Professions as Regards Numbers.—In 1910, to each hundred thousand of the population in the United States there were 172 physicians, 145 clergymen and 133 lawyers. Since 1910, the standards of medical education have been markedly raised, the number of medical schools has been greatly reduced, and the tendency to limit the number of students admissible to each school has grown. Though the physician graduating to-day has received a much better training than the graduate of a decade ago, the number graduating is being reduced and we are now threatened with a dearth of physicians, despite the fact that the legitimate medical needs (diagnostic, curative, preventive and administrative) of the country are rapidly increasing. Doubtless, however, our medical and social statesmen, some of whom are recognizing the dangers of a too scanty supply already manifest in the relative abandonment of the rural districts and in the startling increase of medical quacks and cults, will take steps to prevent the reduction of medical

schools and of the number of medical students from going too far.

Much could be done, too, to render the work of a profession, that has been reduced in numbers and raised in standards of proficiency, more comprehensive and efficient by the encouragement of better forms of organization among its members, and laudable efforts in this direction are also becoming evident. Society would be very unfortunate if those to whom it entrusted the care of the bodily and mental health of its members were to fail to develop leaders with sufficient vision and influence to ensure the recruiting and appropriate training of a medical profession proportionate to its needs.

Aims of the Writer of This Book.—The purpose of the writer in preparing this book has been to try to be of help first to young people who, not yet having reached a vocational decision, desire to compare the advantages and disadvantages of a medical career with those of other occupations, and, second, to young persons who, having already chosen medicine as their life-work, or having entered upon it, are seeking information that may be serviceable in guiding them toward success and usefulness in it.

Young men and women should decide for themselves upon the work of their lives. They should not expect others to make their decisions for them. Before arriving at a final conclusion upon so important a matter as a life-career, it behooves them to secure as reliable information as possible concern-

ing the advantages and disadvantages of, and the conditions bearing upon success or failure in, the possible careers contemplated. They will wish to know, on the one hand, the attractions of a given occupation, and, on the other, the objections that may be raised against it. They will want the opinion of some experienced person of the personal qualifications that offer promise of success in it, and of the kind of theoretical education and practical-technical training that will best prepare for it. With such data available, and assuming a fair power of self-appraisal of abilities and opportunities, young men and women should be able to arrive at rational decisions as to the work in which they may best engage.

It would seem, therefore, to be the duty of experienced men in each of the professions to provide the necessary information regarding their particular callings. Others have written an account of conditions in law, teaching, religion, engineering, politics, and business. The object of the author of this small volume is to present as briefly and clearly as possible some of the facts, as he sees them, regarding the medical profession. If his experience, such as it has been, in medical practice, medical teaching and medical research and his personal observation of the work of others should be found useful to young persons who are contemplating medical work or who have already entered upon such work, he will be sufficiently rewarded for the toil of com-

pilation. And if the volume contain some matters that prove to be of interest also to men who have been long engaged in medical practice, teaching, or research, its author will have still more cause for gratification.

CHAPTER II

THE MEDICAL PROFESSION

The Services Renderable by the Medical Profession in Our Social Organization

(1) Through the practice of medicine; (2) through the teaching of medical subjects; (3) through the making of medical discoveries; (4) through the prevention of disease and the enhancing of the vitality of the people; (5) through the writing of books and papers on medical topics; and (6) through the organization of the medical profession and the performance of the functions of medical statesmanship.

Man is a creature in whose natural disposition there are deeply implanted both egoistic and altruistic impulses. He seeks personal pleasure and avoids personal pains; but he also shares in the joy and the suffering of his fellows. A good life may be defined as one in which a high degree of realization of the self is associated with the greatest possible worthy service to society. In considering the attractions of the medical profession, therefore, we can scarcely do better than to discuss its relations to two sets of values, first those of the social benefits that can be conferred, and, second, those of the personal rewards and satisfactions that may be experienced. Let us consider the social services that can be ren-

dered first, and, afterwards, the opportunities afforded for the realization of the self by a career in medicine.

I. Services Renderable to Society by the Medical Profession

Man may be thought of as a "combination of wants", which express themselves in "desires" that impel him to try to satisfy them. Students of human society have analyzed these wants and desires and have roughly grouped them under six heads: (a) health, (b) wealth, (c) sociability, (d) knowledge, (e) beauty, and (f) righteousness.[1]

The activities of the members of society are directed toward the satisfaction of the desires that these wants excite. In other words, society may be looked upon as a great want-gratifying mechanism.[2] The individuals in a given population vary greatly both in the degree in which they personally feel each of these several fundamental wants and in their ability to gratify them in others and in themselves. These quantitative differences in the feelings of wants and in the capacities to gratify wants largely account for the diversity of human occupations. Division of labor among human beings with concentration upon special tasks has greatly increased both personal and general well-being.

[1] Small, A. W., and Vincent, G. E. *An Introduction to the Study of Society.* New York, 1894, 384 p.

[2] Marshall, L. C., and Lyon, L. S. *Our Economic Organization.* New York, 1921.

Some people devote themselves to the production and distribution of material goods (or wealth) that will satisfy wants; among these may be cited as examples the farmers, miners, lumbermen, butchers, millers, tanners, mechanics, manufacturers, transporters, and merchants. Others devote themselves to the production of non-material goods or services; among such persons may be mentioned organizers, administrators, politicians, clergymen, teachers, lawyers, physicians, and amusers. Human activities can, accordingly, be classified according to the personal and social wants that they attempt to gratify.

The non-material goods that physicians produce, the services they render, are designed to gratify the general human desire for health. Everyone desires to be free from pain, suffering and disease; he wishes to enjoy a high degree of vitality; it is greatly to his advantage as a biological unit to react physically and mentally in the most appropriate way to the environmental influences that impinge upon him. The welfare of society as a whole is hindered by the structural defects and the functional inefficiency of its members. It is to the advantage of local groups of people, of nations, of races, and of the human species to have individuals born with normal structures and tendencies and to have them protected from injurious influences after birth. It is to the medical profession that society has relegated the special tasks that pertain to the preservation of

health, the prevention and cure of disease, and the alleviation of physical and mental suffering.

The kinds of service that physicians may render are diverse. A general summary of these services may be made, after which they can be discussed in more detail. If a man, a woman, or a child is not healthy, it is desirable to know why; the task of the practising physician is to find this out (*diagnosis*) and to apply, if possible, suitable remedial measures that will restore health and normal responsivility (*therapy*). More important still is the preservation of health and the prevention of disease (*prophylaxis*); society is therefore interested in ensuring favorable factors of inheritance for its members (*eugenics*) and conditions of living that will not be injurious either to the well-born or the ill-born (*euthenics*). It is essential, then, that all the hereditary and all the environmental influences (natural and artificial) shall be thoroughly investigated in order that they may be fully understood in their relations to health, efficiency and happiness; the knowledge desired can be obtained only through the activities of trained scientists who will make the prolonged, patient, well-planned, and accurate studies that will lead to its discovery (*medical research*). In order that the discoveries made shall become generally known and applied, the knowledge gained must be sufficiently diffused. Its content must be permanently recorded and rendered easily accessible (*medical publications; medical libraries*).

A sufficient number of persons must be taught to acquire the medical knowledge that exists, must be shown how to increase it, and must be trained to skill in applying it in diagnosis, treatment and prevention (*teaching in schools of medicine, of hygiene and of public health*). In order that the public shall be protected from incompetent medical practitioners, the State must inquire into the qualifications of the graduates of the schools before permitting them to practice (*medical licensing boards*). There is important work to be done, too, by medical men who possess unusual capacity for systematizing and giving orderly structure to the combined work of physicians and surgeons (*medical organization; hospital administration; group practice*). Finally, the welfare of society demands that at least a few medical men of extraordinary vision, of philosophic grasp, and of sound common sense shall envisage the principal relationships of medical men to society as a whole and shall influence the profession and the public in ways best calculated to promote the good of both (*medical statesmanship*).

Obviously, then, the forms of possible medical services in our social organization are manifold. They provide occupations for medical men of very different native powers and of most varied opportunities and training. Corresponding to this wide range of abilities and of variform training, society provides, as we shall see, a sliding-scale of material and non-material rewards. Medicine, then, is not a

narrow field but a broad expanse of territory offering opportunities in great variety to divergent gifts and encouraging many special disciplines.

1. The Practice of Medicine and Social Usefulness

Though in the wider sense medical practice includes all of the activities referred to in the preceding paragraph, it is customary to apply the designation "practice of medicine" to the medical care (diagnosis, treatment and prevention of disease) of single persons, either in their homes (family or domiciliary practice), at physicians' offices (office consultation), or in special institutions designed for the care of the sick (hospital practice, asylum practice, sanatorium care). Physicians who are paid directly by the people they care for are said to engage in "private practice", to distinguish them from practitioners who, though caring for patients, work on a salary for private or public institutions (salaried physicians, or whole-time practitioners, in hospitals, sanitaria, asylums, jails, reformatories, schools, factories and mines; medical officers in the U. S. Army, U. S. Navy, etc.). All these private and salaried practitioners engage to some extent in the work of disease prevention among their clients in addition to caring for them when they are sick; but preventive and hygienic work of a more general nature, such as that conducted by boards of health in towns, cities and states, by the U. S. Public

Health Service, by national organizations like the National Committee for Mental Hygiene and the National Tuberculosis Association, and by associations of still wider scope like the International Health Board, is carried on mainly by men who are not engaged, in the more restricted sense of the term, in the "practice of medicine". Though the time may come when more persons will be engaged in the prevention of disease and in activities directed toward ensuring an abounding vitality for the people than in the care and treatment of those who are actually sick, the bulk of the members of the medical profession of today are engaged in this medical practice in the narrower sense. It would seem fitting, therefore, to consider, first, some of the fields of work that the actual practice of medicine offers to young men.

The diagnosis, treatment, and prevention of disease in single persons constitutes, as I have said, the "practice of medicine" in the ordinary usage of this term. Medical practice is carried on by members of very different groups in the profession. The bulk of the work is done by men who do not specialize, but who engage in many or all departments of practical work—the so-called *general practitioners.* A smaller part of the work is done by men—the *medical and surgical specialists*—who do not attempt general practice but restrict their activities to one or another of the particular fields of practice.

The General Practitioners.—The men who engage

in general practice make up the rank and file of the medical profession. Of the 147,000 physicians in the United States in 1926, less than 20,000 limited their practice to that of a specialty. Of 1526 medical college graduates of the class of 1920, however, some 36 per cent limited their work to that of special practice, some 23 per cent became general practitioners solely and about 40 per cent took up general practice but in addition gave particular attention to a specialty (Weiskotten).

The general practitioner, or G. P. as he is called for short, takes care of all the ordinary ills of the men, women and children of the families among whom he practices. He attends the women in childbirth (obstetrical work); he gives directions regarding the care and feeding of infants and makes diagnoses of (and prescribes treatment for) the commoner diseases of children (pediatric work); he attends the adults who suffer from infections and parasitic diseases, or who have symptoms referable to diseases of the nose, throat, ears, and lungs, the heart and blood-vessels, the blood, the digestive system, the kidneys, the sex organs, the bones, muscles, and joints, the nervous system, or the glandular and metabolic apparatus (internal medical work); and he performs minor, and sometimes the simpler major operations when they are indicated (surgical work).

Obviously, the general practitioner should have had a wide education and training in the principles and methods of all the practical branches of medi-

cine, and should be a person of varied interests and of manifold special aptitudes. Even thus outfitted, his powers will be most severely taxed. No kind of practice is better calculated, however, to develop resourceful natures into independence.

The general practitioner is every day faced with the necessity of immediate action. He must arrive at his conclusions on the basis of the facts that are before him and of the principles that he has accepted as established, for he has need of quick executive decisions and that need can be met only by this method. It has been my good fortune, through consultation work, to come closely into contact with a large number of the general practitioners of my own and other states, and my respect and admiration for the better type of G. P. has steadily grown with the years. The more one knows of medical conditions, the better he appreciates the difficulties to be surmounted in general practice and the more ready he is "to take off his hat to the G. P.".

The general practitioner is needed in both rural and urban districts. In the country and in the smaller towns he is the only kind of medical man in practice, for, as yet at any rate, and for obvious reasons, specialists and consultants and coöperative groups, with rare exceptions, are to be found only in the larger towns and cities.

The country physician in general practice may be compelled to serve a large area with a sparse and scattered population. Formerly, he went on horse-

back, with saddle-bags; later, as the roads improved, he travelled by horse and buggy; to-day, the parts of the country inaccessible to the automobile, at any rate in summer, are becoming fewer, and the transportation problems of the rural practitioner are more easily solved. This ease of transportation, however, has resulted in increased competition of the urban practitioner with the country doctor, sometimes to the embarrassment of the latter.

A busy country practitioner may have difficulty in systematizing his work and rest, for he is on call at all hours. Many babies are born in the night, and an acute appendix attack may develop without warning at any hour of the night or day. The general practitioner's life is thus full of emergencies. At one time he may be consoling a mother whose child has just swallowed an open safety-pin; the next hour he may be injecting tetanus antitoxin into a laborer who has perforated his foot with a garden rake; a little later in the day he may be lancing the throat of a patient with quinsy; on his way home, he may be handed an urgent message demanding his immediate attendance upon a woman bleeding from the womb, a boy with a fractured clavicle, a mechanic with a splinter of metal in his eye, a brother doctor with an attack of angina pectoris, or a despondent woman who has just swallowed carbolic acid with suicidal intent!

The idea is prevalent that with the advent of specialism, towns and cities (in which specialists and

consultants tend to aggregate) have less need than formerly of the general practitioner. This is a grave error. The G. P. is fully as important as he ever was for the welfare of persons and families in urban communities. Most of the medical care of the inhabitants of towns and cities is, and still should be, entrusted to general practitioners. No other kind of practitioner, not even a "group" of specialists, can adequately perform the functions of the able G. P. Each person and each family should employ an able, well-trained, sensible general practitioner as a guide in personal hygiene, as a medical adviser in ordinary illnesses, and as a counselor in the choice of consultants, specialists, or groups when they are needed. The person or family deprived of such guidance, advice and counsel is truly to be pitied, for without the aid of the right kind of G. P., injurious habits of living may be persisted in, diseases that might easily be arrested in their incipiency are permitted to progress to a stage in which they are more difficult to cope with, and in the more difficult or obscurer cases, the wrong consultant, the wrong specialist, or some arrant quack, may be called upon for diagnosis or treatment.

The general practitioner has certain opportunities for the study of disease that are only with difficulty available to consultants or specialists. Thus he, better than they, can study families as a whole and so can become especially well acquainted with the significance of hereditary tendencies and with

the relations of "constitution" to predisposition to disease. Moreover, the G. P. is in a position to observe disease in single persons over prolonged periods. He is the one to be consulted about the earliest symptoms of a disorder, and in diseases that are progressive, he can watch their course from inception to termination.[3] By virtue of his position as the observer and adviser of families, the well-trained general practitioner who studies diseases through their whole history in single persons and in family groups should be peculiarly fitted to gain knowledge regarding the significance of given symptoms and groups of symptoms for the future of those who manifest them; in other words, he, rather than the consultant or the specialist who sees a patient once or only occasionally and who rarely is able to follow disease in a single person over a long period, is the medical man who may well be expected to make genuine contributions to the science of "prognosis," which forecasts the course of diseases.

Similarly, the general practitioner is the medical man who is in a better position than others to watch the ultimate results of the treatment of disease. The surgeon who performs a brilliant abdominal operation sees his patient at most for a few days or weeks after the operation; the general

[3] Cf. Mackenzie, Sir James, "The Assessment of the Value of Symptoms." In his: *The Future of Medicine.* London, 1919, 147-152.

practitioner has the patient under his observation for years after the operation and learns of many sequels of which the surgeon may, perhaps, have no idea. The consulting physician or specialist may make an astute diagnosis and outline a well-devised therapy, but it is, as a rule, the general practitioner to whom in chronic cases of disease is entrusted the execution of this therapy and who is in the best position to judge of its effects. Thus, for the advance of the science of therapy, as well as for that of prognosis, much is to be expected from the studies of men in general practice.

The general medical practitioner is obviously indispensable in our social organization, for the tasks that he performs are essential for the public welfare; but society must not look to him for more than he is capable of doing. It is, of course, not possible for any single person to attain to expertness in every single medical or surgical branch. The general practitioner therefore can be expected to attain only to a fair general competence in practice as a whole. The wise man engaged in general work will recognize the cases in which it is his duty and privilege to seek the aid of specialists, consultants or practising groups. This recognition of special needs should be anticipated by the general practitioner, even before the patients themselves become aware of them. Thus, the general practitioner will know when to have laboratory tests done, or x-ray examinations made, by others when

he has not the special skill, or is too busy, to make them himself. In cases in which symptoms and signs are persistent, the diagnosis obscure, or the treatment problematical, he will say so frankly to his patient and help him in the selection of an appropriate consultant or diagnostic group. Should the patient require a major surgical operation or a specialistic study or treatment that is beyond his skill and equipment, he will see to it that, when desirable, suitable hospital arrangements are made and that a surgeon or other specialist who is adequate to the prospective task is employed. In these ways also, in addition to his personal attention in diagnosis and treatment, the general practitioner can serve his clients and will increase their confidence in him and their affection and respect for him. The relations of the general practitioner to the families under his care thus become peculiarly intimate and personal as well as professional. They make an especially strong appeal to high-minded men with sympathetic tendencies and generous impulses.

Medical and Surgical Specialists.—The Rise of Specialism and the Advantages of Specialization.— The increasing development of specialism in medicine is the logical continuation of the great process of division of labor with concentration upon restricted tasks that has characterized social and economic organization in general as civilization has advanced. The differentiation of tasks keeps pace

with the growing complexity of society to the great advantage both of single workers and of society as a whole.[4]

For, in the first place, specialization increases productivity. When tasks are subdivided, the divisions result in operations that are easier of performance than those of the undivided work; moreover, work is made easier by frequent repetition. Thus, specialization in medicine and surgery, as in commerce and industry, is a device that has greatly increased the total results of professional labor.

In the second place, specialization favors the gaining of precision and rapidity in achievement; it develops quick, exact, skilful workers for the performance of the difficult and often delicate tasks in the several particular domains of diagnosis and treatment. Knowing how to apply a method is a very different thing from the acquisition of accuracy, speed and skill in making use of it. The expert becomes skilful through restriction of his activities to, and constant practice in, his chosen field. In practical-technical procedures, it requires time, concentrated attention, and frequent repetition for the gradual coördination of the eye, the hand, and the brain; performance steadily grows easier, the performer more thoroughly proficient. An operation that is slowly, clumsily, and pain-

[4] Cf. Clay, H., *Economics: an Introduction for the General Reader,* New York, 1919.

fully carried out at first can, after it has become a habit, be turned over to what the psychologist William James called the "effortless custody of automatism". The general practitioner has too many different tasks to perform to permit him to acquire high skill in equal measure in all of them. Indispensable as he is, the profession and the public gain by the education and training of a number of specialists, who, through restriction of their work and long practice in it, gain the specialized experience that ensures unusual expertness. General practitioners coöperating with specialists can thus do better work and can help the public more than can either the general practitioner or the specialist alone.

And, in the third place, division of labor within the medical profession leads to a distribution of tasks that is more in accordance with the differences in natural endowments and the varied opportunities of the practitioners. Society is best served medically when each physician engages in the kind or kinds of work to which his native abilities and his education are best suited. We have here again illustrated the desirability of finding the peg that is best shaped to fit the hole.

Furthermore, in the fourth place, both materials and energy can be more advantageously employed when medical tasks are subdivided and allocated to specialists. Equipment requires less multiplication and there is less wastage from lack of use. Mental

friction is diminished when professional activities are to some extent restricted in scope and variety. A man who is compelled to perform each day a whole series of very different tasks tires more easily and loses more time than does he whose work does not require too frequent a change of the direction and the content of his thought. From the standpoint of economy of material equipment and mental energy, then, a strong argument can be educed in favor of medical specialization.

And, in the fifth place, and finally, the progress of medical science is markedly hastened by men who devote themselves exclusively to separate parts of the complex whole of medical work. Not only does knowledge grow more rapidly; new practical-technical operations are also more quickly devised through the consecration of professional activity to special experience. Both discovery and invention in medical domains are accelerated by specialized pursuit.

Disadvantages and Dangers of Specialism.—The advantages of medical specialization (increased productivity; facilitated acquisition of skill; improved distribution of tasks among the workers; lessened expenditure of material equipment and mental energy; swifter advancement of discovery and invention), though thus sufficiently obvious, are not wholly unattended by disadvantages and dangers. For every virtue in this world there would seem to be a vicious hanger-on, and the ex-

cellences derivable from specialization in medicine are not in this respect exceptional. Indeed, unless specialization be carefully supervised and controlled, harm may be done to patients, general practitioners may be injured, and specialism itself may be damaged. The difficulties and dangers of specialization should therefore be frankly envisaged in order that they may be overcome or avoided.

There is some danger that specialization may pass beyond the limits within which it may, at a given stage of development of medical science and art, be legitimately and advantageously cultivated. Someone has recently defined a specialist as one who learns more and more about less and less! At each period, the desirable degree to which medical tasks may be subdivided and professional functions differentiated should be recognized; and this should not be exceeded, or evil rather than good may result. All degrees of specialization or restriction of work in practice are met with, from the general practitioner who decides to do no major surgery or to "cut out" obstetrical practice to the ultra-specialist who confines his attention to the disorders of a particular organ (*e.g.* the heart), to the study of a single disease (*e.g.* tuberculosis), or to the employment of a single technical method of examination or of treatment (*e.g.* roentgenology, hydrotherapy).

As early as the second century of our era, in the

time of Galen, there were in addition to the general practitioners of medicine not only special doctors for the eye, the ear and the teeth, but also persons who treated only single disorders such as hernia, fistula, or stone, or who employed only a single kind of treatment such as hydrotherapy or massage. The time was not yet ripe, however, for fruitful specialization in medicine, for this could not appear until after the natural sciences of chemistry, physics and biology had made great advances.

The medical specialism of our time finds its justification in the enormous extent of knowledge and the bewildering variety of technique that have resulted from systematic investigations in natural science domains and the application of the experimental method in research. As physics, chemistry, biology, anatomy, physiology, psychology, and pathology have developed, medical men have found themselves provided with an enormous stock of new knowledge that they can draw upon for the expansion of medical theory and an abundance of new practical-technical procedures that they can apply in diagnosis and therapy. It is but little wonder, then, that the new opportunities should have stimulated medical men to intensive work in special domains, and it has been as a result of such work that the medical and surgical specialties have undergone an unprecedented development. But there is always danger of pushing task division and func-

tional restriction on the analytical side farther than the state of knowledge and technique at a given time justifies. Though society needs experts, it does not want tubular-visioned specialists, nor is it helped by inefficient masquerading pseudospecialists who, far too numerous now, do much to bring genuine specialism into discredit.

Another danger of excessive medical specialization is that of "losing sight of the wood on account of the trees". A specialist, intensely interested in one organ, one disease, or one technical method, is all too prone to forget the patient as a whole—a whole that is something more than "the sum of its parts". Even when a patient is examined by a whole series of specialists, each of whom makes an exhaustive report upon conditions in his particular domain, the patient may profit but little unless the total findings are correlated and integrated and correct conclusions drawn regarding the respective relations of the single findings to the patient's powers of biological adaptation. Exact analyses of bodily, mental and social conditions must be followed by suitable synthesis and be supplemented by intuitive impressions of the whole physique and character in any general diagnostic survey of a patient before a therapy can be planned that will be adequate to restore as much responsivity as is, in all the circumstances, possible. The "diagnostic integrator" is thus fully as important as the "diagnostic analyst", as will be pointed out a little later when group prac-

tice or teamwork in practice is considered. Unless the limits of desirable specialism that have been mentioned are duly recognized and unless suitable provision for the correlation and integration of the findings of single specialists is made, supplemented by "diagnostic intuition" of persons as a whole, patients may fail to secure the benefits that contemporary medicine is capable of yielding, the activities of medical examiners will be largely wasted, and the profession may to some extent be brought into disrepute.

Another danger to which medical specialization is exposed is that of the evil effects that excessive concentration of interests and narrow range of operations tend to produce in the minds and characters of those who practice them. The "piece-worker" is peculiarly exposed to these deteriorative influences that accompany work that is lacking in variety. The weariness that comes through excessive sameness is prone to seek compensations that impair his adaptability and his power to coöperate with his fellow-workers. The specialist who permits himself to grow vain, arrogant, objectionally aggressive, stubbornly opinionated, or boastfully self-sufficient, detracts from the honor and renown of a profession that should strive to be noble and worthy. The knowledge that such dangers exist should lead those who specialize to avoid too pronounced a restriction of interests and of operations. They should plan their lives and their work in a manner that will

ensure the establishment of an equipoise to the narrowing tendencies of their special training. For life without sympathy, without tolerance of the views of others, without something more than technical efficiency, is unworthy and undesirable.

Still another danger pertaining to specialism should be noted, namely that of the selection of specialist practitioners by patients independently, without the counsel of their regular family physicians. Reports of marvelous cures performed by some specialist reach the ears of a sick person or of some member of his family and the idea at once arises in the mind of the patient, "If that specialist cured So-and-So, why shouldn't he cure me?" And the idea harbored often leads to the act of consultation, though the specialist concerned may be wholly unsuited to the patient's needs, and any well-informed general practitioner could have told him so at once and saved him unnecessary and undesirable expenditure of time, energy and money. To some extent, perhaps, general practitioners themselves have been responsible for patients seeking the aid of specialists through their own initiative. For general practitioners have not always recognized early enough the need of special tests, or the desirability of securing the aid of a consultant or of systematic team work in diagnosis in certain cases. Moreover, some general practitioners fear that the suggestion of a consultation will reflect upon their own competence and will shrink from requesting aid even when

they feel the need of it—a grave error. Even when the general practitioner feels no need of consultation, he should always remember that his patient or some friend or relative may be greatly comforted if the responsibility of diagnosis and treatment is shared with some well-known expert and he will gain rather than lose in the estimation of the patient and his family if he suggest the consultation before it is asked for, or even before it has been thought of. A decent and honorable consultant or specialist is fully aware of the conditions under which the general practitioner is compelled to work and will take due care during consultations to increase, rather than to diminish, the patient's confidence in his family physician. Even when patients consult specialists independently, it would seem desirable that reports should be sent to the family physician and that the specialists should do everything within their power to ensure the continuance of the general practitioner's wholesome relationships with his patients. Some specialists and consultants have been negligent of their duties in this respect. Such neglect is most reprehensible; it brings injury to patients; it antagonizes general practitioners; and, in the end, it is harmful to the specialists themselves. General practitioners, consultants, and specialists must learn how most satisfactorily to cooperate in the care of the sick; this is essential, in the first place, for the welfare of the patients, and,

in the second place, for the good repute of the different branches of the medical profession itself.

To these several disadvantages and dangers of specialism (non-recognition of its desirable limits; one-sided study of the patient; failure of integration of multiple specialistic studies; deteriorative influence of over-narrow specialism upon mind and character of practitioner; mistakes made by patients who independently seek special skill; faulty coöperation among general practitioners, consultants and specialists) the attention of the public and of the profession should be frequently directed and every effort made to avoid or overcome them. General practice, consultation practice, and specialized practice are all necessary and desirable. Each form of practice has its place in meeting public wants. The representatives of each of these forms must discover how best to help patients and how best to coöperate with the representatives of the other forms of practice.

Distribution of Practice Among General Practitioners and Specialists.—A very erroneous opinion exists as to the frequency of instances in which general practitioners feel the need of the help of specialists or of diagnostic and therapeutic "groups", and this popular error has been strongly combatted by two strong friends of the general practitioner—Dr. Frank Billings and Dr. Arthur Dean Bevan of Chicago. I cannot do better than to quote the com-

ments of the latter upon the results of his investigation of the subject:

"In order to obtain a conception of the work which the general practitioner does in private practice, I obtained the evidence from several well-trained men, practicing in communities of from three to five thousand inhabitants, and also from men doing general practice in Chicago. I asked them what classes of cases they were taking care of without the assistance of consultants and specialists, what proportion of their cases were sent to a specialist, what laboratory work they were doing themselves, and what arrangements they made for laboratory work in general. These general practitioners are doing all sorts of medical work: obstetrics; infantile disease; general medicine, such as pneumonia, typhoid fever (fortunately now rare), kidney and gallstone colic, nephritis, and various lesions of the gastro-intestinal tract; injuries in general; fractures; dislocations; hernias; the ordinary ear, nose and throat work, including by some of them the removal of tonsils; the ordinary skin diseases; neurologic cases that develop in their work; insurance examinations; testifying in medico-legal cases, such as personal damage cases; testifying in regard to the insanity of individuals; general preventive medicine involved in handling infectious diseases in a community, such as diphtheria, measles and scarlet fever; venereal diseases; heart lesions, and the ordinary minor eye conditions, such as foreign bodies,

conjunctivitis and iritis. In their practice they themselves use the simple laboratory methods, such as urine examinations, blood examinations, especially hemoglobin, the leukocyte count and the differential white cell count, and examinations of sputum, feces and stomach contents. They make the blood-pressure examinations. A considerable proportion of them do their own roentgen-ray work. There are certain laboratory tests which, as a rule, they do not do. They send their Wassermann examinations, Widal tests and pathologic specimens from operative work to some commercial laboratory. They send their specimens from the infected throats in suspected diphtheria cases to the state laboratory for examination and report. Most of them do minor surgery and many of them do emergency surgery, such as operations for acute appendicitis and strangulated hernia.

"The consensus among these men seemed to be that they took care of about 97 per cent of the patients who came to them, in the sense that they took complete charge of the case, and they referred about 3 per cent of their cases to specialists. My conception before I investigated this matter thoroughly was that the general practitioner probably referred from 10 to 15 per cent of his cases to specialists. After discussing the matter with well informed general practitioners, as I have done, I am convinced that in a large general practice, the practitioner sees so many slight ailments that the per-

centage of cases which requires the services of a specialist is probably well under 5. The well-qualified general practitioner can take good care of 95 per cent of the patients in his community.

"I have gained from this investigation a wholesome respect for the practitioner in general practice who prepares himself so that he can take care of all classes of medical cases. His task is a much more difficult one than the task of mastering a narrow specialty, and he has a much broader conception of disease, a conception which enables him to be often of more service than a specialist.

"The patient, as a rule, does not know just what is the matter with him. He does not know what specialist to consult, and the normal plan of handling the sick people in a community is for the patient to go to a competent general practitioner. From the evidence of my investigation, in from 95 to 97 per cent of the cases, the well-trained general practitioner is the best man to handle the case, and in the other 3 or 5 per cent the general practitioner is better qualified than any one else to determine in a general way what the condition is and to select the specialist required for the particular lesion from which the patient suffers. The special purpose of the undergraduate medical course is to train these general practitioners properly. The general practitioner must have on his desk, and within ready reach at all times, and must use them in his everyday work, his textbooks on anatomy, physiology,

pharmacology and pathology, his textbooks on medicine, obstetrics and surgery, and some small textbooks especially written for the general practitioners on specialties of the eye, ear, nose and throat, and dermatology; also a good book on hygiene and public health. The general practitioner who will study his cases with the aid of such textbooks will be doing the best possible kind of postgraduate work. Nothing that the American Medical Association could do in the way of postgraduate medical education would be so important as a propaganda urging all members of the Association to do just that sort of postgraduate work in their own practice, the work that can be done by their own brains, with their own books and on their own patients." [5] Though there may be some differences of opinion as to the results of the investigation cited, most medical men will concur in the view that the legitimate province of the general practitioner's work is much larger than the general public realizes.

The Special Branches of Medical Practice.— Turning now to restricted practice, as contrasted with general practice, we must distinguish, first, three great subdivisions of practice, which, though they involve some restriction, still demand a wide range of activities in contrast with the more restricted range of a "specialty" in the narrower sense. These three great subdivisions are: (1) Inner Medicine, (2) General Surgery, and (3) Obstetrics.

[5] J. Am. M. Ass., Chicago, 1923, p. 1189.

Inner Medicine, or *Internal Medicine* as it is often called, cultivates the largest restricted field of practice, differing from general practice only through the exclusion of surgery, obstetrics and those parts of the medical and surgical specialties that demand extraordinary practical-technical skill. The practitioner of inner medicine, now generally known as an "internist", studies the patient as a whole and in all of his parts, discovering what is wrong, planning the treatment, and carrying out those parts of it that are not surgical or ultra-specialistic in nature. He has to deal, therefore, with all the organs and systems of organs—respiratory, circulatory, digestive, urogenital, locomotor, nervous, mental and metabolic. The amount of theoretical knowledge and of technical experience required for clinical mastery in such a wide domain of structure and function is obviously very large, too large to be gained by anyone with powers and tendencies that are less than encyclopedic. It is rare, as a matter of fact, to find a professed internist who is equally competent in all parts of the wide domain that he is supposed to cultivate. Inevitably, interests, capacities and opportunities determine that work in certain parts of his field is more intensively undertaken than in others; indeed, many who are known as "internists" frankly acknowledge their relative ignorance in certain domains (*e.g.* nervous, psychiatric, endocrine, or metabolic). Even the best and most widely trained internist needs at times to enlist the aid of

practitioners who have specialized in single parts of the great domain of inner medicine. Inner medicine, as a whole, however, on account of its wide range, its manifold interests, its many opportunities for the application of a whole series of the natural sciences and the preclinical medical sciences has always appealed to some of the best minds in medicine and has counted among its representatives no mean proportion of the recognized leaders of the profession.

Inner Medicine had a sound foundation as early as the time of Hippocrates (460-370 B.C.), the "Father of Medicine", who declared that it must be based upon "observation and experience", a declaration that was revived two thousand years later by the great English physician, Thomas Sydenham (1624-1689), and which has been supported and exemplified ever since by all the great internists, including Bright, Addison, Hodgkin, Graves and Stokes in Great Britain, Louis and Trousseau in France, Skoda in Austria, Frerichs, Kussmaul, Gerhardt, von Ziemssen and Naunyn in Germany, and, in this country, Daniel Drake, Austin Flint, Sr., Abraham Jacobi, Alfred L. Loomis, Jacob M. DaCosta, the Janeways (father and son), R. H. Fitz, James Tyson, William Pepper, and, above all, Sir William Osler, not to mention leading internists now living.

The work of the internist became ever more precise as the preclinical sciences (anatomy, physiology,

psychology, pharmacology, pathology and bacteriology) developed and supplied facts and methods that could be applied to the solution of clinical problems.

In *diagnosis,* physical methods of examination (inspection, palpation, mensuration, percussion and auscultation) were gradually elaborated and were greatly extended by the invention of instruments that mediate between the naked sense-organs and the objects under examination; among these the percussion-hammer and plexímeter, the stethoscope, the clinical thermometer, the microscope, the ophthalmoscope, the laryngoscope, the stomach tube, the cystoscope, the roentgenoscope, the bronchoscope, the sphygmograph, the tonometer, the string galvanometer, and the respiration calorimeter are deserving of special mention. The symptoms of disease were accurately described and grouped into so-called "clinical pictures", "symptom-complexes", or "syndromes"; clinical studies were controlled by postmortem examinations; the course of disease and its outcome were observed and recorded and the results analyzed by the "statistical method"; and the procedure of "experiment" was utilized to reproduce diseases in animals where they could be studied at will and at leisure.

The *treatment* of disease, at first purely "empirical", was slowly forced to become more "rational". The fallacies of elaborate measures of drug treatment based upon *a priori* reasoning from metaphys-

ical conceptions of disease were exposed, so that for a time, especially through the influence of Skoda, many physicians, going to the other extreme, became skeptical regarding the efficacy of any form of drug treatment ("theraputic nihilism"). One of the ill-founded theoretical systems, Hahnemann's "homœopathy", assumed that the effect of drugs upon the body could be increased by extreme dilution or by trituration with inert powders; hence infinitesimal doses were given, the amounts being so small that no physiological influence (except a psychotherapeutic one) could have been exerted. Both Skoda and Hahnemann accordingly, the one consciously, the other unwittingly, led physicians to study the natural course of disease uninfluenced by drugs and gave manifold opportunity for the observation of the "healing power of Nature (*vis medicatrix naturæ*)".

It was only after internal medicine had passed through this period and had become dominated for some time by the principles of natural science that rational therapeutics could emerge. But the newer therapy was worth working and waiting for. Today, the internist has at his disposal a host of measures that may be advantageously prescribed in the treatment of his patients—diet, air, water, heat, cold, altitude, light, electricity, x-rays, radium emanations, rest, exercise, work, amusements, enjoyments, mechanical manipulations, massage, baths, climates, drugs, chemicals, vaccines, antitoxines, and

psychic and social influences, as well as the services of trained nurses, of occupation-therapy teachers, and of surgeons, should these be indicated. Best of all, the internist of to-day, supervising his clients even when they are "well" is able so to aid them in the direction of their lives that much disease is prevented and as abounding a vitality is assured to them as is possible within the limits of their heredity and of their inescapable environment.

General Surgery, too, covers a wide area of professional work, demanding for its adequate cultivation an extensive knowledge of principles and a long practical-technical training both in the application of a special form of therapy and in the work of diagnosis. The general surgeon must not only know how to recognize and treat wounds of all sorts, fractures, dislocations, and pyogenic infections but he must be able and willing to explore the several cavities and internal organs of the body when they are the sites of accidents or diseases that are amenable to his surgical art. His life is, on the one hand, one of acute emergencies, and, on the other, of grave responsibility in the management of chronic cases. The calls that are made upon him are likely to tax to the uttermost both his courage and his endurance. His physical and mental make-up and his habits of living must be such as to ensure his possession, in all circumstances, of a cool head and a steady hand. Manual dexterity and the instincts of the handicraftsman are indispensable to the surgeon; no

young man should decide upon surgical work unless he likes to do things with his hands and is of a distinctly mechanical turn. But, manual skill alone will not suffice to make a good surgeon. Nowhere in medicine is quick and sound judgment based upon a knowledge of principles and how to apply them more needed than in the practice of surgery; and surgical judgment is not a function of the hands!

Surgery had its beginnings in the remote past. Even in prehistoric times, there must have been some primitive surgical practice—the treatment of wounds, the control of some forms of hemorrhage, and the setting of fractured bones. From early human records (Egyptian, Babylonian, Semitic, and Hindu), we learn definitely that many surgical instruments had been devised and a large number of surgical operations were being performed at the very dawn of history. Thus, open wounds were dressed, broken bones were splinted, foreskins were cut off with a sharpened flint, abscesses were opened, limbs were amputated, and the operations of venesection, trephining the skull, and Cæsarean section had been devised. In India, particularly, surgery early reached a high degree of development, probably the highest attained in antiquity. By the 5th century A.D. more than 120 varieties of surgical instruments were in use; such difficult operations as cutting for stone in the bladder and removal of cataract from the eye were known and practised, and the technique of surgical procedures was systematically taught to novices in the art.

During the first fifteen centuries of the Christian era surgery had an experience of vicissitudes. The Greeks and Romans had a well-developed surgery and looked upon it "not only as a mode of therapy but as the very

right arm of internal medicine." They knew how to control hemorrhage by twisting or ligating blood vessels, and they operated upon hernia and upon aneurysms. But Avicenna, the successful Persian physician who lived in Bagdad and wrote in Arabic, taught that surgery was an art inferior to medicine and should be kept separate from it.

As Sir Clifford Allbutt has emphasized, the divorce of medicine from surgery was also the fundamental error or medieval medicine, which relegated the general practice of surgery "to barbers, bath-keepers, sowgelders, and wayfaring mountebanks". Fielding Garrison, to whose admirable *History of Medicine* we have all learned to turn when we wish to verify some point in the medical past, when referring to the medieval period, remarks: "To lift the surgical art to its modern scientific (aseptic) status required the genius and personal influence of the three greatest surgeons of all time—Ambroïse Paré, John Hunter and Lord Lister." Paré translated Vesalius' great work on anatomy and did much to enrich clinical surgery; Hunter gave surgery a scientific foundation upon anatomy, physiology and experimental pathology; and Lister, applying Pasteur's work, taught the profession how to prevent the infection of wounds, after which surgical explorations of the interior of the body (abdomen, pelvis, chest, and the cavities of the joints, the skull and the spine) could be safely undertaken.

Through the safety from infection (assured by antisepsis and later by asepsis), and through the boon of anesthesia (Morton; Long), which abolishes pain during operations, it has been possible for modern surgery to undergo an extraordinary development. Men like Billroth, Esmarch, Bergmann, Mickulicz, von Eiselsberg, Bier, Kehr, Korte, Payr and Lexer in Austria and Germany, Kocher and Roux in Switzerland, Paget, Mac-

Ewen, Horsley, Treves, Spencer Wells, Lawson Tait, Mayo Robson, and Moynihan in Great Britain, Guyon, Albarron and Tuffier in France, Bigelow, Gross, Agnew, Keen, Senn, Weir, McBurney, Hartley, Morris, Coley, Sayre, Murphy, the Mayos, Halsted, Kelly, Finney, Abbe and Matas in the United States (leaving unmentioned the group of young surgeons now most active) have brought the practical-technical methods of surgery to a high degree of perfection.

Obstetrics, or *Midwifery,* tills a smaller field than either of the other two great subdivisions of practice just referred to, but none the less a field of the highest importance for human welfare. The exigencies of obstetrical practice make it desirable that in cities, at any rate, certain practitioners should devote themselves exclusively to it.

In earlier times, attendance upon women during childbirth was left entirely to members of the female sex. The "midwives" or "obstetricians" were women, for reasons of modesty. Male midwifery got a start in France in the seventeenth century, but it was not until the following century, and then largely due to the rise of anatomical studies, that physicians were extensively made use of for the care of women in labor. Many women midwives (without general medical training) have attained to considerable expertness in the conduct of normal labor and even, to-day, vast numbers of births are supervised by them (in sparsely settled districts because of lack of doctors; in large cities because of poverty).

Before obstetrics became the subject of careful study by scientific physicians there was, however, great wastage of human life and much unnecessary suffering. In difficult labors due to deformities of the pelvis, both child and mother were sometimes sacrificed to ignorance; from the unclean hands of midwives many mothers died of the much-dreaded "puerperal fever"; from inability of midwives to control hemorrhage, great numbers of women bled to death before or after labor. The transfer of midwifery to trained physicians revolutionized obstetrical practice. The invention of the obstetrical forceps, the kneading of the womb through the wall of the abdomen, the use of ergot after delivery for the prevention of post-partum bleeding, the discovery of the causes and of the methods of prevention of puerperal infection, the introduction of the use of chloroform for the mitigation of labor pains, the precautions taken to prevent puerperal convulsions, and the prevention of blindness in the newborn child by the instillation of a few drops of weak solution of silver nitrate, are some of the triumphs of the application of science to the management of women and children at childbirth. At one time, delivery in a hospital was attended by grave risk of infection; to-day, the dangers of childbirth in a well-conducted hospital are so much less than elsewhere that many well-advised women leave their luxurious homes to give birth to a child on account of the maximum safety that the hospital ensures.

The practice of obstetrics is sometimes combined with the practice of gynecology (diseases of women), but, recently, since gynecological work has become so largely surgical, this tendency has been rather discouraged. A busy obstetrician who spends many of his nights supervising difficult labors may be rendered physically unfit for exacting surgical procedures during the day. Still, both in Europe and in this country, many men of strong physique seem successfully to have combined the two departments of work.

Other Specialties.—Besides the three subdivisions of practice just mentioned, there are a whole series of fields of restricted practice that may be cultivated as "specialties", any one of them affording sufficient scope for the full time and energies of an able and ambitious practitioner.

Pediatrics, or the diagnosis and treatment of disease in children, for example, offers a field of work very similar to, though owing to the restricted age-period of the patients not commensurate with, that of internal medicine in general, of which it is an important branch. The problems of the nutrition of infants, those of the exanthematous diseases, and those of the psychology and behavior of the child, are of themselves a sufficient justification of the separation of pediatrics as a specialty. The great reduction in infant mortality witnessed in our time has resulted from discoveries made by scientific pediatric investigators and the systematic education

of family practitioners and of parents and nurses in the technique of child hygiene.

Clinical Neurology deals with the diseases of the nervous system and the clinical neurologist is now looked upon as one of the more important of the specialistic practitioners. The anatomy and physiology of the central and peripheral nervous system of man are very complex sciences that must be mastered before the study of the changes that take place in disease and the symptoms to which these give rise can be advantageously studied. The very difficulties of neurology have, however, added to its attractiveness in the minds of some medical men, and, in all countries, the names of the outstanding neurologists have ranked with those that were most learned and distinguished in medicine. Until recently, clinical neurology was essentially a medical specialty; to-day, however, especially in the United States, we have surgeons also who are limiting their work to neurological domains and who are rapidly increasing knowledge and improving and extending practice in this very special field.

Psychiatry, which deals with disorders of thought, feeling, and behavior, is closely allied to clinical neurology, indeed should, strictly speaking, perhaps be considered a branch of the latter study. In its early development, however, it was more especially concerned with the outspoken disorders that are known by the laity as "insanity" or "lunacy" and the sub-

ject was cultivated apart from the other branches of medicine in the asylums for the insane. Recently, psychiatry has had a new birth. Physicians have learned that all gradations exist between what we regard as normal thinking, feeling and striving and those wide departures from the normal that are met with among the feeble-minded, the insane and the criminal. From now on, no general practitioner and no medical or surgical specialist can afford to be unfamiliar with the fundamental facts of psychology and psychiatry or with the general principles of mental hygiene. The recognition of this altered position of psychiatry in our time can be seen in the establishment of psychiatric clinics as parts of our general hospitals and in the extension of the time allotted to medical psychology and to clinical psychiatry in the curricula of our better medical schools.

The success or failure of a human being, like that of an animal, depends upon the making of suitable biological adjustments to environmental influence. It is the province of psychiatry to study the reactions of human beings as wholes, to become familiar not only with the intellect but also with the emotional life and the will of their patients, to analyze human personalities from the standpoint of reaction-types, and where social maladjustments have been in evidence to determine their causes and, through suitable treatment (physical, chemical, psychical and

social), to see to it that the lives of their patients are arranged in the ways best suited to their biological assets and liabilities respectively.

Thus, the importance of some knowledge of psychiatry for the general practitioner who advises the mothers of developing children, for physicians who supervise children and adolescents in schools and colleges, and for the physicians in attendance at charitable and correctional institutions, becomes immediately obvious. The work of national and local committees for mental hygiene will become more efficient as the medical profession and the public in general become better acquainted with the meaning and value of psychiatry.

Ophthalmology, the science that has to do with the eye in health and in disease, has always been regarded as one of the "noblest" of the medical and surgical specialties. The physics of vision early attracted the attention of the great astronomers and physicists who studied the eye as a camera obscura and called attention to the refractive and accommodative mechanisms through which images fall upon the retina, laying the foundations for the great discoveries later of Thomas Young and Hermann v. Helmholtz in physiological optics. The practical significance of clinical ophthalmology in correcting errors of refraction by lenses, in restoring sight to the blind by removal of cataracts, and in recognizing the relations of visual disturbances to functional and organic disorders of other parts of the body,

especially the nervous system, is now well known, even in lay-circles.

Otology, laryngology, and rhinology, the three special sciences that deal with the ear, the throat and the nose in health and disease, are usually, on account of their intimate relationship, represented by a single specialist, known as a "nose, throat and ear specialist" (oto-rhino-laryngologist), though here and there a man may devote himself to one of the three subjects exclusively, especially the ear.

The invention of instruments for inspection or illumination of the nose and paranasal sinuses, the larynx and the ear and the applications of roentgenology to diagnosis have done much to increase precision in the diagnosis of diseases of these parts and to facilitate the local treatment of the diseases in which their structures are involved.

The nose, throat and ear specialist must now be a skilful surgeon, for no small part of his work consists in the removal of nasal obstructions, of infected adenoids and tonsils, or of inflammatory products in the sinuses about the nose, or in the middle ear (including the mastoid cells). With advances in these special branches, great numbers of lives have been saved (through the prevention of blood-poisoning and of brain abscesses) and much chronic invalidism has been avoided (through the prevention of deafness, of valvular and muscular disease of the heart, of diseases of the joints, and of diseases of the kidneys, any of which may arise as

distant sequels of primary disease of the nose and throat).

Studies of the vestibular apparatus of the ear by modern otologists have thrown much light upon certain nervous disturbances, especially upon those in which dizziness or vertigo is a symptom.

Orthopedics, the special branch that deals with disorders of the static and locomotor apparatus (bones, joints, muscles, tendons, and bursæ) affords sufficient diagnostic and therapeutic problems to justify its cultivation by representatives (orthopedists) who devote the whole of their time and energies to it. The advances that have been made in the treatment of flat foot, of club foot, of curvatures of the spine, of congenital dislocations of the hip, of deformities due to muscular defects, and especially of disabilities following poliomyelitis (infantile paralysis) are to be accredited largely to practitioners who have specialized in orthopedics. American surgeons, especially, have made most important contributions to these domains.

Many orthopedists have been expert mechanicians who have devised a variety of mechanical appliances and of complex supportive and corrective apparatuses, more or less useful in orthopedic therapy (though I have known instances in which these contrivances seemed to be more efficacious in their psychotherapeutic than in their mechanotherapeutic influence!).

To orthopedists, as well as to neurologists, is due

also much of the recent growth of interest in physical forms of therapy (massage; corrective exercises; applications of heat, light, and electricity in treatment).

Dentistry is, strictly speaking, one of the medical and surgical specialties, though largely on account of the mechanical nature of much dental work and of the need throughout the country of great numbers of dental practitioners, it has developed as a profession separate from medicine. Relatively few dentists have taken a general medical training before specializing in dentistry, though now that the relations of abnormalities of the teeth and gums to disorders elsewhere in the body (infections; digestive disorders; metabolic disturbances) has become generally recognized, it is probable that a larger number will do so in order that the overlapping fields of dentistry and general medicine may be properly tilled. It would scarcely be profitable for the rank and file of dentists to spend the time necessary to secure a degree in medicine before turning to the study of dentistry as a specialty, though the efforts of the dental profession to demand a better general education of candidates and an increase in their scientific training merit general approval. For the public has benefited *pari passu* as the social and educational status of dentists has been heightened.

America has led the world in advances in practical dentistry and the dental profession has, within itself, discovered the necessity for the further divi-

sion of labor. Thus, to-day, in our larger cities, we find, in addition to general practitioners of dentistry, dentists who restrict their practice to the extraction of teeth (exodontia), to the correction of malocclusion (orthodontia), to the restoration of masticatory surfaces (prosthetic dentistry), or to the treatment of pyorrhea (Riggs' disease) respectively. That this further specialization has contributed largely to discovery and to improvements in the practice of dentistry, everyone familiar with the conditions in this branch of medicine will readily admit.

Dermatology, or the science that studies the skin and its diseases, began to be practiced as a medical specialty about the beginning of the nineteenth century, since when it has undergone an interesting and remarkable development. During the succeeding century and a quarter it has passed through three distinct stages: first, that in which the appearances of the skin to the naked eye in different diseases were carefully described; second, that in which the changes in the skin in diseases were studied under the microscope; and, third, that in which the causes of many diseases of the skin were traced directly to infection by bacteria or other fungi, or to invasion by microscopic animal parasites.

Despite the advances that have been made by dermatologists who have studied their specialty by applying scientific methods, there is a general feeling that this branch may be on the verge of fully as great or even greater discoveries than have hereto-

fore been made in it. The newer studies of neurology, on the one hand, and of the chemistry of the tissues and of the internal secretions of the ductless glands on the other, make it seem probable that new light will shortly be thrown upon many of the diseases that involve the skin, its several constituents, and certain of its derivatives such as the nails and hair. Fame awaits the clinical dermatologist who satisfactorily solves, for example, the problems of eczema, of psoriasis, of scleroderma, or of baldness!

Clinical Pathology.—So-called "clinical pathology," that is to say, the study in the clinical laboratory of secretions, excretions, or excised tissues, either to aid in diagnosis or as a control of treatment, is a specialty that has recently become attractive. Though often followed by young physicians immediately after graduation as a stepping-stone to some other form of practice, it is rapidly becoming a practical branch to which men and women are willing to devote themselves for a lifetime.

Modern medicine and modern surgery place great reliance upon reports of accurate physical, chemical, microscopical and cultural studies of the urine, the blood, the sputum, the stomach juice, the feces and the cerebrospinal fluid, and they, as well as studies of lymph glands or of tumor masses excised for diagnosis, often determine the form of treatment that shall be employed in a given case.

Though every general practitioner should, while

in the medical school, be taught the methods that are employed by the clinical laboratory worker and should learn to understand their meaning and their value, it is only the commoner and simpler tests that he can himself regularly employ in his everyday work. The technique of many of the clinical laboratory procedures is too complicated, circumstantial, and time-robbing to permit of their personal application by a very busy practitioner. This is especially true of the Wassermann reaction as applied to the blood and the cerebrospinal fluid for the diagnosis of syphilis, of bacteriological and immunological studies of the blood and other fluids, and of the more elaborate chemical analyses of the blood and urine that are becoming clinically ever more useful as knowledge of metabolism is being increased by those who devote themselves to the work of research.

Clinical medicine profited predominantly for a long time by the application of physical methods of exploration; then came a period when the principal advances were made by the utilization of microscopic and cultural methods of study; to-day, while all these methods continue to be employed, new frontal attacks on disease are being delivered by those who apply chemical methods of investigation in the solution of clinical-pathological problems. The talented young man or woman who, at this time, enters the medical school armed with a Ph.D. degree in organic or physical chemistry, should have nothing to regret during the next decade or two, for

undoubtedly during the coming period we shall see great successes scored by those who will discover how best to advance our knowledge of diagnosis and treatment by means of the practical-technical methods that are learned in the laboratories of chemistry.

Roentgenology.—The contributions of roentgenology to medical science and practice are a notable example of the unexpected advances that may quickly follow upon the discovery of a new method in physics. When we think of the host of clinical roentgenologists at work at their specialty to-day in all parts of the world, of the enormous number of x-ray photographs that are made to help in diagnosis, and of the extensive use that is made of these rays in treatment, it is hard to realize that it is less than 40 years ago (in 1893) that Wilhelm Conrad Roentgen made his epoch-marking discovery. And the utilization of the discovery of radium, made a lustrum later by the Curies in Paris, is still another example of how quickly the physicians of our time exploit the findings of the research workers in the fundamental and practical sciences for the good of mankind.

Minor Specialties.—Besides the major specialties that have already attained to general recognition, there are many other special branches of medicine and surgery that are gradually taking their places as fields for intensive study and practice. Thus, among the internists, there are some who restrict their work largely to the diagnosis and treatment of

diseases involving a single system (as do the *gastroenterologists,* the *hematologists,* the *cardiologists,* and the *endocrinologists*), or to that of a single disease (as do some specialists in *tuberculosis,* in *syphilis,* or in *diabetes*); and among the surgeons, there are some who limit their work to a relatively narrow field, say that of a single system (as do the *brain surgeons,* the *gynecologists,* the *urologists,* and the *proctologists*), or even almost to that of a *single operation* (prostatectomy; herniotomy; thyroidectomy; anaesthesia). Here the limits of specialization desirable for our time are approached, if, indeed, they have not actually been reached or even transcended; for the drawbacks to, and dangers of, specialization multiply progressively as the field of work is increasingly restricted. Undoubtedly, however, as medical specialization and surgical specialization have become ever more pronounced, new knowledge has been more speedily acquired and new and valuable practical-technical methods have been more rapidly devised. The work of the medical profession does not, however, diminish; on the contrary, it steadily increases, for advances in knowledge and technique create among the people new wants as well as the consciousness that the means for their gratification have been provided.

2. The Teaching of Medicine

Though the practice of medicine will always attract the majority of those who enter upon a

career in medicine, there is another field that is sure to draw for its cultivation a considerable proportion of the ablest minds in the profession, and that is the field of medical teaching. To the young physician of marked ability with strong scientific interests, the opportunities offered for personal development, for the realization of the higher self, and for efficient work in the service of society are at this time and in this country nowhere greater, perhaps, than in medical pedagogy.

Every physician is, in a sense, a teacher. The general practitioner is constantly educating the families under his care in the rules of physical, mental and social hygiene. The specialist, also, cannot fail to instruct his patients and his fellow-practitioners in some of the principles of his specialty. Those who write and speak on medical subjects are engaged to that extent in medical instruction. But by the teaching of medicine as a career I refer, of course, to the instruction that is given in organized schools of medicine and hygiene (undergraduate or post-graduate) in which those who teach make the discovery and the diffusion of medical knowledge the principal work of their lives.

In medical instruction there are two great functions to perform. The body of medical knowledge now existent represents the accumulated experience of countless generations of medical workers in the past. It is the first function of the teacher of medicine to show the new individuals who are constantly

coming forward to take the places in medicine of those that are leaving it how to gain access to the facts that have been stored, how to interpret these facts, and how to apply them in the diagnosis, the treatment and the prevention of disease. Of equal or even greater importance, is his second function, that of leadership in the acquisition of new medical knowledge and in the advancement of professional technique. For the ideal teacher of medicine is one who besides disseminating knowledge fosters activities that lead to new discoveries. Having through painstaking work attained to an especially accurate acquaintance with the scientific principles and the practical-technical methods in a given domain of medicine, he, himself, strives to increase knowledge in that domain by his own original research. By example, therefore, as well as by precept, he favors the development of the intellectual capacities for knowledge in his pupils and stimulates in them those powers of original thinking through which contributions to the progress of medical science are made and upon which improvements of our medical art depend.

No youth should attempt a career in medical teaching unless he possess the natural gifts that are necessary for success in it, nor unless he have a really earnest desire to enter upon it. Without such gifts and devoid of that desire, he will be a failure; and, standing in the way, he will obstruct, perhaps, the advance of someone better qualified for teaching.

But young persons with the requisite natural endowments can find in medical teaching a vocation that will be personally adequately rewarding as well as socially very useful.

Medical teaching offers, too, a wide range of choice to those who look forward to engaging in it. Whereas some teachers, perhaps the majority, may prefer to occupy themselves with the clinical branches (medicine, surgery, obstetrics, or one of the medical or surgical specialties), others may select as a field of work one of the preclinical medical sciences (anatomy, physiology, physiological chemistry, pharmacology, pathology or bacteriology) or a branch of preventive medicine in a school of hygiene. Besides the increasing opportunities that exist for undergraduate teaching, there are also ever more openings in graduate medical teaching as our universities are becoming better endowed and as special institutes for medical research are becoming established. Men who are predominantly teachers rather than investigators will find their places in the undergraduate rather than in the graduate medical schools, whereas those who are predominantly original investigators and are perhaps less well suited for undergraduate instruction will perform an important function in leading a few younger persons into research work in the graduate schools or in the special research institutes.

There is room not only at the top of the teaching profession but all along the educational line from

the bottom upward for intelligent, trained and devoted teachers of medicine. A livelihood is assured to such teachers, as well as the rewards that come from doing work that is enjoyable and from rendering a public service the value of which can scarcely be measured in economic units. There is, moreover, a dignity and importance attached to the office of the teacher of a medical science that goes far to compensate for the modesty of its financial return.

The history of medical teaching in the United States shows an interesting evolution. At first, medical men were trained by the old system of apprenticeship, the student attaching himself to a practitioner, who acted as his preceptor and taught him what he could of the principles and practice of medicine. Then came the ungraded medical school in which a single course of lectures and an opportunity to dissect the human body, or at least to observe the dissected body, were provided. Later, as the preclinical sciences underwent rapid development, the time of medical instruction had to be lengthened, the size of the faculty was increased, a graded course was introduced, and the facilities for laboratory and hospital instruction were multiplied.

For a long time, however, medical teaching had to depend mainly upon the so-called "proprietary" schools of medicine, schools that were organized by practitioners in the absence of any suitable provision for medical education in association with the colleges of the liberal arts or the universities. Though

many of these proprietary schools did excellent work for their time and did much to improve medical teaching and to increase the opportunities of medical students for laboratory and clinical studies, they were compelled to be self-supporting, and the state of medical science was rapidly reaching a stage when the fees of students were no longer sufficient to defray the necessary expenses of medical education. In some of the proprietary schools abuses crept in, the schools being actually run for the profit of the "proprietors" rather than for the benefit of the students; in such schools, there was a tendency to increase attendance by keeping the requirements of admission and the standards of graduation low.

Though the abuses in the poorer proprietary schools were discountenanced by the teachers in the better schools and efforts were made to heighten the standards of medical education by the institution of state boards of licensure, which made the successful passing of an examination before the state board in addition to the possession of a doctor's degree from a medical college prerequisite to permission to engage in medical practice, thoughtful educators saw that the time had arrived when sweeping reforms must be made in medical education if the profession were to keep pace with the advances that were so rapidly being made in the natural and social sciences. It was clear that in addition to the income derived from the fees of students, money must be provided, either by private endowment or by the

State, for hospitals, for laboratories, for equipment and for the salaries of teachers who would be willing to devote all, or at least a considerable portion, of their time and energies to medical instruction. It also became obvious that, in order to profit by the teaching of the medical schools, the students must enter the schools with a better preliminary education than before, since without a good general education and some special training in physics, chemistry and biology, the teachers of the medical sciences would be seriously handicapped; they would be compelled either to make provision for such preliminary education in the medical school itself, or to be content with medical teaching conducted on the low level of the insufficiently prepared students admitted.

A great step forward was made when certain of the universities began to take medical education seriously and either established new medical faculties or took hold of and reorganized their old medical faculties that had been such in name only, having been in reality only proprietary schools run under the ægis of the universities. The admission requirements of the medical schools were gradually raised, a four-year graded medical course was established, and the standards of graduation heightened. Laboratories of anatomy, physiology, pharmacology, and pathology were established, and in some of them paid full-time professors were put in charge. The clinical teaching of medicine, surgery, obstetrics and some of the medical and surgical specialties became

greatly improved, largely through making the hospital an integral part of the medical school, the introduction of wardwalks, the arrangement for the instruction of students in small groups in the technique of physical methods of examination, the establishment of clinical laboratories for the chemical and microscopical studies of materials derived from patients, and the utilization of senior students in the actual work of the wards of hospitals and outpatient departments, where, as clinical clerks and surgical dressers, they recorded the histories of the patients, made physical examinations, did certain of the routine laboratory tests, and participated in minor therapeutic manipulations.

The older didactic methods, which consisted chiefly of lectures and quizzes upon text-books, were gradually largely supplanted by the modern method of scientific instruction, through which the students are brought into direct contact with the objects of study and learn by *doing* rather than merely by hearing or reading. The students, too, in an increasing number of schools were brought into intimate personal contact with instructors who were not content with knowledge as it existed, but were striving by rigidly accurate observation and well-devised experimentation to modify views that had been held or to make new discoveries in diagnosis and treatment and in the sciences that underlie these practical branches.

To make such reforms, the trustees of the uni-

versities were compelled to seek additional funds, either from private benefactors or through influencing legislators in favor of increased appropriations from the State treasuries. But the prestige gained by the schools in which these reforms were inaugurated did much to stir other schools to emulation, and the movement, once started, made rapid progress.

Another strong impetus to improvement of medical education came from the better organization of the medical profession as a whole, into local, state, and national associations. The pressure exerted by these associations, and especially by the American Medical Association, its *Journal*, long ably edited by Dr. Geo. H. Simmons, and its Council on Medical Education and Hospitals (wisely guided by its chairman, Dr. Arthur Dean Bevan), has benefited medical education incalculably, as have the conferences regularly held by the Association of American Medical Colleges. Through these influences and through the example early set by the better medical schools, especially those of Johns Hopkins University, Harvard University, the University of Chicago, and the University of Michigan, and soon followed by a large number of other university schools, entrance requirements, graduation requirements, and laboratory and hospital facilities have been rapidly standardized, the number of medical schools has been markedly diminished through the extinction of the unfit, and the calling of the medical teacher has been greatly raised in dignity and importance. The

medical profession has apparently, in this country, outstripped law and even technology in the race for superiority of educational opportunity.

Among the paramount influences of this period of reform in medical education must be accounted the report made for the Carnegie Foundation for the Advancement of Teaching by Mr. Abraham Flexner in 1910. In this report the exact situation of the medical pedagogic problem in the United States was strikingly portrayed and compared with conditions in the European schools. Through its accurate analysis of the medical schools then in existence, through its trenchant criticism of institutions, standards, methods and personnel, through its merciless castigation of all that was sordid and unwholesome in American medical education (upon the abuses of which it delivered a veritable *coup de bec*), and through the ideals that it alluringly depicted of the conditions of medical education as they can and should become, this volume stimulated enormously both thought and action in medical teaching circles. Though the name of its author was quite naturally anathematized by some of those whose material interests were to suffer as a result of its publication, and though there were among educators with the highest aims differences of opinion regarding certain of the conclusions arrived at, it is now generally recognized that the thorough ventilation of the subject by the report was most timely and that Mr. Flexner's investigations and recommenda-

tions were weighty contributions to the progress of educational reform. That his name will live in the annals of improved medical pedagogy there can be no doubt, even though in his time there have been some who have placed their hearts "where there doth need exclusion of participants in good!"

Recently, a novel experiment in medical education has been put to the test in the hope of still further improving medical education; I refer to the extension of the idea of so-called "full-time" or "whole-time" professorships to the clinical branches. In view of the amazing improvement in the teaching of anatomy, physiology and pathology that followed upon the appointment in charge of these subjects of salaried professors who did not engage in the practice of medicine but gave all of their time and energies to the promotion of their subjects by teaching and research in the schools, the idea arose that possibly the principal clinical as well as the preclinical sciences might better be represented in the medical schools by full-time professors salaried sufficiently to justify abstention from private practice; in other words, that the professors of medicine, surgery and obstetrics be asked to devote themselves exclusively to the interests of the hospitals and medical schools without remuneration other than that of their fixed salaries and engaging in no practice for fees at all, or if any limited practice that was charged for were permitted, either inside or outside the hospital of the school, the fees were to go not to the professor-

practitioner but to the treasury of the medical school. Up to that time the professors in the clinical branches had received either no salaries at all, or salaries that were small compared with the financial rewards common to consultation practice, so that the clinical professors were expected to make their entire income, or to supplement their small salaries, by fees from consultation, an easy matter since the clinicians who held the leading chairs in the medical schools were much sought after as consultants by general practitioners on account of the special knowledge and skill they had acquired as well as because of the prestige given them by the positions they held in the schools. Though in certain of the schools, there were professors of medicine and surgery who enjoyed clinical teaching and investigation so much and who took their school and hospital responsibilities so seriously that they had voluntarily restricted their private practice to that minimum necessary to provide an income suited to their station, it was felt by some medical reformers that, in order to ensure the highest type of teaching in the clinical branches, salaries must be provided for the professors that would make private practice unnecessary for income. Some reformers went even further and suggested that, in order that the temptation of money-making should be entirely removed from the paths of the professors of medicine and surgery, the acceptance of professional fees by them should, in all circumstances, be prohibited; admitting that the argu-

ment that there might be occasions when for one reason or another these professors should be permitted to serve private patients had some force, the arrangement was suggested that the fees charged for such services should not accrue to the professors but to the medical schools or the hospitals that paid their salaries.

This idea of salaried whole-time clinical teaching was strongly advocated by the late Professor Franklin P. Mall, the distinguished anatomist of the Johns Hopkins Medical School. For many years before any attempt was made to put this idea into practice, Professor Mall had ardently discussed with his pupils and personal friends the advantages that, in his opinion, such a plan possessed for the advance of the clinical subjects of the curriculum. During this time I was an assistant on his staff and my interest in the project of whole-time clinical teaching was aroused by Dr. Mall's enthusiasm for it, and in our many walks and talks together, I was convinced that the method should be given a trial. And though my paper "Medicine and the Universities" (1903), written when I was teaching anatomy in Chicago, was, I believe, the first publication in which this whole-time plan was advocated, any merit for the origin and promulgation of the idea should be attributed to Mall, for whom I was privileged to be the mouth-piece. It was also largely through Professor Mall's influence, I believe, that both Mr. Abraham Flexner and Dr. Simon Flexner

became convinced of the desirability of whole-time clinical teaching and they in turn, along with Dr. Wm. H. Welch, had much to do with the securing of funds from the Rockefeller Foundation, through which a trial of the plan could first be made in the Johns Hopkins Medical School (1914).

Since then the topic of whole-time clinical teaching has been actively discussed both by supporters and opponents of the idea, and, in addition to the trial at Johns Hopkins, attempts to realize it or some modification of it are being made in other medical schools (Harvard University, Washington University, Vanderbilt University, Yale University, the University of Rochester, etc.).

Many difficulties in the adoption and realization of the plan, not all of which could be foreseen by those who proposed it, have arisen, and time and considerable experience with the workings will be necessary to determine in how far it should be applied, and what modifications it should undergo. Where the money necessary for the best clinical teaching is to be obtained, and how part-time clinical teachers can best be utilized alongside of whole-time clinical workers in our medical schools in order to obtain the best results are two of the problems that press for solution. That there are many advantages in this whole-time plan is obvious, but that there are also many disadvantages is equally clear. Those who are to be responsible during the coming decade or two for the conduct of our medical schools

should use their utmost tact and apply their greatest wisdom and skill in working out the methods of clinical teaching—both whole-time and part-time—that will yield the best results. They should see to it that no dogma is permitted to prevent the medical schools from securing at a given time the best brains and the strongest personalities available in the profession for the clinical chairs, for there would be no advantage in filling positions with men of no great intellectual calibre merely because they were willing to abide by the arbitrary and non-essential rules and regulations of ambitious moral reformers. They should bear in mind that "slavery to rigid formulas means too often the death of all high moral responsibility", and that a certain "indefiniteness is really a prime condition for effective moral action"; they should emphasize that realistic and practical point of view that has characterized the best American medicine, and maintain a profound aversion to scholarship that is pedantic or too abstruse and speculative; they should protect their ablest clinical teachers and investigators, both whole-time and part-time, from excessive burdens of routine work; they should avoid the creation of a whole-time teaching caste or monopoly that excludes any part-time teacher who can and should teach the clinical subjects from participating; they should shun conditions by which occupants of whole-time positions are unjustly exploited by institutions; they should arrange a suitable division of labor within each clin-

ical department so that research work, the development of original investigators, the best care of the patients in the clinic, and the various administrative functions can be looked after without sacrificing the welfare of undergraduate medical students; they should keep their clinical faculties sufficiently in contact with the rank and file of the practising profession to favor the welfare of both; and they should remember that medicine is an art in which skill and tact must be acquired as well as a science that is to be learned and enlarged, and that medical students need contact with exemplars of practical skill as well as of investigative ability.

We can be sure, I think, that, in the present period of transition in clinical teaching, the deans and the executive committees of the faculties will do their best to gain all possible advantages and to overcome all surmountable difficulties for the good of the schools they direct; indeed, for the benefit of the students in the schools and for the welfare of the medical profession and the public this must be demanded of them. In the promotion of all far-reaching reforms, it has been found that Procrustean beds are injurious, that conflicting opinions need to be adjusted, and that clashes of policy often require settlement by mutual concession. Though righteous principle dare not sacrifice too much to harmony, wise administrators know that free and full discussion should precede action, that compromises are sometimes temporarily necessary for progress, and

that a discreetly guided gradual evolution is often far more effective than sudden or violent change. No great advance can be expected to spring forth from the head of a reformer, even the most sapient, "ready-made and in full armor like Pallas Athena!"

Teaching in schools of hygiene, preventive medicine, and public health, offers at the present time a new and promising field for useful social service to the young man who contemplates a career in medical pedagogy. As knowledge of disease and its causes grows, the materials that serve as a basis for discussion of preventive methods are in ever-increasing abundance supplied. The public has rapidly awakened to the importance of measures for the protection of the public health, and medical officers of health are much in demand and are being ever better rewarded. Formerly, such public health officers were untrained, or were compelled to gain their special training by a sort of apprenticeship to someone of experience. To-day, the Schools of Hygiene and the Schools of Public Health furnish suitable training both for experts and for technical assistants and in turn have created many teaching positions that possess their own special attractiveness.

Gratifying as the improvements made in medical education in America in our time have been, there is still a vast field for betterment in medical pedagogy to be cultivated. The young man entering medical teaching to-day will have plenty of opportunity to engage in the reform movements that should be

started to-morrow. Those who know most about the medical teaching of the present in the United States will be the first to admit its crudity and immaturity, its surplusages and deficiencies of content, its lack of method, and its inadequacies of correlation. Moreover, both freedom of teaching and freedom of learning in medicine, though they have celebrated many victories, have still their battles ahead that must be fought and won.

Medical teaching needs further democratization on the one hand, further personalization on the other. The time must come when every person able to teach and desirous of teaching medicine shall find opportunity to exercise this function, and when any student who deserves to do so may have the privilege of studying any medical subject under the medical master of his choice and for whatever purpose he wishes. The absurd "class" system that now prevails and makes it impracticable for the student to follow any but a rigidly prescribed order of study through each year of a four-year course and a disgrace not to graduate with his "class" must sooner or later give way to totally elective systems of studies, and to semestrally or trimestrally arranged curricula that permit of longer or shorter total courses of study for the undergraduate, and without contumely, provided that a certain minimum of time and of attainments be not infringed.

Who that is familiar with conditions in the great universities in Europe before the war, does not look

forward, too, to the time when students in our own country may migrate freely from university to university, not only for graduate study, but also during the undergraduate period, studying anatomy here, pathology there, and, if desired, clinical medicine elsewhere, seeking the professor and institute of choice without prolongation of the course and without prejudice to prospects of welcome, of facilities for study, or of fairness of final examination?

And when a new generation inaugurates some of these reforms, let those of the older be tolerant to changes rather than over-stubborn in resistance. For it has been true, in every age, that the young men have shown a tendency to shake off, almost with ingratitude and contempt, the fetters that bound them to the preceding age to which they owed their own education.

3. The Making of Medical Discoveries and Inventions as a Social Function

Among the highest forms of social service open to the young man in medicine are (1) the discovery of new facts regarding health and disease and of the principles that underlie them, and (2) the invention of new practical-technical methods in the various domains of medical science.

In each generation there are always certain young persons who are particularly suited for the important tasks that have as their aim the enlargement of knowledge and the improvement of technique,

and it is highly desirable for the welfare of society that those whose native capacities particularly fit them for the performance of such tasks shall be encouraged to undertake them and shall receive the special training that is indispensable for achievement in the work of original research.

Nature must be ever more carefully scrutinized in order that hitherto unknown resources may be brought to light; for in medicine, as in all other fields of human endeavor, progress is made only through gaining a better acquaintance with nature's laws and obeying them. In order rationally to direct physical, psychical and social forces toward the improvement of the health of the people, their potencies must first be understood; our power to predict and to control can be increased only through the gradual extension of our knowledge of causes and effects, of purposes and ends. He who discovers a new medical fact, a new principle in medical science, or a new application of existing medical knowledge, makes, therefore, a definite contribution to the general welfare of society.

New discoveries and inventions in medicine are always the result of the slow and painstaking accumulation of facts made by a host of observers and experimenters in the past; each addition, no matter how small, to the aggregate of accurately observed phenomena of health and of disease makes it easier still further to add to the store. The original investigators of medical problems to-day are thus depend-

ent in no small degree upon the results of the productive researches of the long line of practising and investigating physicians and the generations of workers in the natural sciences who have preceded them. What at first sight might seem to be the gigantic yield of the activities of an individual mind is found on analysis to be the culmination of a prolonged series of results contributed to by an indefinite number of minds in the past, the apex of a pyramid whose base was laid by many remote forerunners. The functions of discovery and invention are, too, strikingly dependent upon a more or less orderly division of labor and upon co-operative effort. The original medical investigators of our time are thus co-partners not only with their living colleagues but also with workers in all previous generations who have engaged in the important business of revealing nature's secrets so that they may be put at the service of society.

Medicine has in the past been a fecund mother of science, for did she not give birth to the numerous progeny of the so-called "natural sciences"? Botany had its beginnings in the search for healing herbs, and chemistry in the quest for potent medicaments. Zoology and biology underwent their early development as sciences largely in the hope that they might throw light upon human structure and function. Important chapters of physics, too, depended for their inception upon the stimulus given by studies of the functions of sight, hearing, and muscular con-

tractions. And even though, at times, medicine has behaved more like a step-mother than a mother to the study of the mind, psychology has found, through the centuries, incentives to fruitful promotion in the interests of medicine no less than in those of philosophy and religion.

Finally, medicine, herself, has undergone, as it were, sporulation, breaking up into a congeries of single sciences—internal medicine, surgery, obstetrics, pathology, physiology, and anatomy—each of which in turn is in process of again sporulating with formation of daughter-groups. Beginning as a descriptive science based on observation and experience, medicine tends to become ever more exact as she applies experimental and quantitative methods. Young persons with scientific leanings may therefore cleave to medicine with full assurance that a mother that has sustained so many who have advanced science in the past will also give to them all necessary nutriment and support.

Careful and critical observation, rigidly controlled and precisely recorded experience, arrangement and comparison of facts, imagination, a sense of the inter-relatedness of things, analogy, hypothesis-formation, planned experimentation to verify or refute, the invention and utilization of instruments of precision, exact analysis, wise synthesis, inductive and deductive reasoning, sound judgment, and the formulation of brief general laws—all play a part in medical discovery, which in turn is only a part

of that great process that has been called the construction of a "working thought-model of the world."

All of the early discoveries were made, and many of the recent advances in medicine have been made by men engaged in the general practice of medicine; but as medical knowledge increased and as the natural sciences grew, medicine became so complex, and technique became so extended, that restriction of interest and concentration of attention upon particular topics were found to be essential for the more rapid promotion of discovery and invention. Specialization, as everyone now knows, is an indispensable feature of the advance of science. The moods and methods of so-called "common sense" must be replaced by the temper and measuring technique of science. Anatomy, physiology, pathology, bacteriology, physiological chemistry, pharmacology and the clinical branches of medicine have made prodigious strides since certain investigators, interested in these subjects for their own sakes as well as for their practical utility, have been willing to devote the whole of their time and energies to their advancement, abandoning activities in other fields.

Research has been especially fostered through the rise of endowed scientific laboratories and of especially equipped clinical institutes in which studies of both the theoretical and practical branches of medicine can be made under ideal conditions. The atmosphere of these laboratories and institutes is

strongly stimulative to the work of discovery, and it is but little wonder that young persons ambitious to engage in research have turned to their hospitable precincts for opportunity, for stimulation, and for sympathy. So fruitful have been the investigations conducted in these places that the idea has become prevalent that original medical inquiries cannot elsewhere be advantageously pursued. This, however, is a grave error. For, in the first place, there are certain problems in medicine that can scarcely be solved except by the general practitioner in the field of family practice, and, in the second place, the physician in active private practice often has opportunity to make contributions to knowledge even in the fields that are being actively tilled also by workers in the laboratories and in the organized clinical institutes.

There is, then, plenty of opportunity for original work in medicine in connection with active practice, and especially for the practitioner who will voluntarily arrange his clinical work so that a certain proportion of his time and energy can be devoted to the prosecution of original inquiries to which the problems that present themselves in his practice spur him. As Sir James Mackenzie, a notable example of the investigating practitioner, has emphasized, the method pursued by such men as Harvey, Hunter, Jenner and Lister has not ceased to be valuable. These men, actively engaged in practice, "recognized in their patients problems that

needed solving and sought their solution by experiments conducted by themselves or under their supervision." Not only is each patient who consults a physician a unique organism (by virtue of the combination of hereditary and environmental factors peculiar to his make-up) and hence a special problem for original study, but the patients seen in private practice, especially those seen by family physicians, are those in whom the earliest stages of disease are met with, stages in which abnormal physical signs may not yet have appeared and in which certain vague subjective symptoms may be the only clues to the recognition of incipient disorder. Moreover, general practitioners rather than hospital physicians or specialists have in the case of the chronic diseases the opportunity of observing patients through very long periods, from the time when these diseases begin, through their earlier, middle and later stages, to their termination either in death or in arrest with impairment of structure and function. The covert import of early symptoms is most likely to be unmasked by those who first observe them and are able to follow the successive changes that they undergo as disease develops; in other words, the "assessment of the value of symptoms", to use Mackenzie's phrase, is a field of research for which the general practitioner is peculiarly well circumstanced. Without his co-operation in this task, investigators whose studies are confined within laboratories and hospital wards would be

seriously handicapped. Would that more general practitioners appreciated their special opportunities and possessed the scientific temper and training that would lead them to profit by them!

Laboratories for experimental work in anatomy, physiology, and pathology, and clinical institutes with physical, chemical, biological and psychological laboratories as integral parts of them, must, however, from now on be provided in all the larger medical centres; for it will be in them that the whole-time teachers and investigators will congregate and it will be to them also that the practitioners who reserve a part of their time for systematic original inquiries will turn in ever-increasing measure for special facilities for study and for agreeable companionship in the work of research. In them should be maintained that unbroken reciprocal relationship between science and practice that is so desirable for the progress of medicine.

The service rendered to society by the men who make medical discoveries, either "theoretical" or "practical", is too great for calculation. Who can estimate the social value of Harvey's discovery of the circulation of the blood, of Withering's use of digitalis in heart failure, of the researches of Young and Helmholz on physiological optics, of Jenner's research on vaccination against small-pox, of Pasteur's studies of fermentation and infection, of Koch's discovery of the tubercle bacillus, of Flexner's researches of anti-meningitis serum, of Ehrlich's

introduction of salvarsan in the treatment of syphilis, of Ross's studies on the prevention of malaria, of Reed, Lazear and Carroll's inquiries into the mode of infection in yellow fever, of Stiles' studies of hookworm invasion, of Murray's use of the thyroid gland of the sheep in patients with defective thyroid function, of Banting's recent utilization of insulin, the active principle of the islands in the pancreas, in the treatment of diabetes mellitus, or of Minot's use of liver diet in pernicious anemia? Or who can measure the social benefits ascribable to the use of chloroform and ether for the production of anaesthesia, to the invention of antiseptic and aseptic methods in surgery, or to the advances in technique that have made possible the surgical operations now performed upon the various organs situated within the great cavities of the body? Or who will tell us how greatly society is indebted to the inventors of the stethoscope, the ophthalmoscope, the laryngoscope, the stomach tube, the hypodermic syringe, and the apparatus for utilizing the x-rays in diagnostic studies? And yet these are only a few of the boons conferred upon society through medical discovery and invention. Furthermore, these and other blessings could not have been gained had it not been, I would emphasize again, for the gradual accumulation through the painstaking and relatively inconspicuous work of an indefinite number of generations of observers and experimenters—

clinicians, anatomists, physiologists, pathologists, bacteriologists, biologists, physicists, chemists and psychologists!

A few great names stand out as the crests of waves on the sea of medical discoverers and inventors, but the body of that sea is made up of the host of invisible workers whose little contributions have in time resulted in that vast accretion that we know as modern medicine. The young investigator of today may never achieve results comparable to those of Claude Bernard, of Rudolph Virchow, of Louis Pasteur, of Lord Lister, or of Jacques Loeb; but, if he work industriously at the solution of the problems that present themselves for study in his time, he may be confident of enlarging knowledge or of advancing technique at least in some small way, and thus become a participant with other servitors in a most important form of social benefaction. As a worker in the more theoretical branches he may be but little influenced by ideas of practical utility, but sooner or later any contribution that he makes will have an influence upon practice, for, in time, all theoretical science becomes "socialized." Practical results that have been wholly unexpected and that are of the highest importance for man often flow from studies that seemed abstruse and that were diligently pursued for their own sake, independent of any interest in their practical applicability.

4. Service to the Public Through the Prevention of Disease and the Enhancing of the Vitality of the People

It has ever been accounted one of the glories of the medical profession that its members have been the leaders in all movements directed toward the prevention of disease and the preservation of health; that is to say, that physicians have ever striven to do away with the ills for the recognition and treatment of which they are paid and whence they gain their own livelihood. None rejoices more than a doctor when a discovery is made that promises to reduce the incidence of a given disease, even though he is conscious that it, at the same time, may lesson the market for his own curative services as well as for those of other members of the profession.

The "sacrifice" is, perhaps, less great, however, than it might at first thought seem, for does not the market for preventive and preservative services rise even more rapidly than that for curative services falls? The sensible layman quickly grasps the fact that trained practitioners of medicine can, through the prevention of disease and through prescribing modes of life that insure the smooth working of the physical and psychical functions, perform a more valuable service to him and to his family than the good that they do, great as that may be, when they attempt to diagnose and to treat maladies that have already come into existence. Astute mem-

bers of the public prefer to pay a watchman to make sure that the barn door is kept shut and locked rather than to employ a detective after the horse has been stolen.

Preventive medicine could, however, be born only after diagnostic and curative medicine had attained a considerable growth. For in their studies of diseases and their symptoms, the changes they produce in the body, and the influence of remedies upon them, physicians gradually approached the problems of "etiology", that is to say, of "causation". Familiarizing themselves with certain effects in disease, they were led back to the events that preceded them, and, among them, attempted to discover the particular events or chain of events responsible for those effects; that is to say, they tried to find "causes" not only of symptoms but also of the diseases in which the symptoms occurred. And as the knowledge of causes of disease and its symptoms expanded, the scope of work in preventive medicine was correspondingly enlarged.

The general basis of the theory of preventive medicine and of hygiene is easy to grasp. This basis may be summed up in two words—"eugenics" and "euthenics." For eugenics is the science that deals with the securing of favorable factors of heredity, and euthenics is the science that deals with the securing of favorable factors of environment. Since human beings, like animals and plants, appear to be the direct resultant of the interaction of heredi-

tary factors with environmental influences, anything that physicians can do toward disease prevention or health promotion must be done either through influencing lineage, on the one hand, or through determining prenatal or postnatal surroundings on the other. They may favor the prospects for health and efficiency of those who are yet to be born (1) by encouraging the mating of the "fit" and discouraging the mating of the "unfit", and (2) by improving the environment of the fetus within the womb of the mother (prenatal influences). And they may favor the outlook for greater freedom from disease and for a high degree of vitality of those already born by arranging, at the different periods of life (infancy, childhood, adolescence, maturity, senescence) for surrounding influences—physical, psychical, social—that, interacting with the given hereditary factors, will yield, in the realized human being or person, the healthiest and happiest resultant. On this broad basis, then, the theory of preventive medicine and hygiene must be constructed.

We are, of course, only at the threshold of knowledges of heredity and environment, though it is something to have gained that broad conception of human life, human health and human disease that we owe to students of biology. But even if we had passed the threshold and had gained a full knowledge of factors of inheritance (genotypic factors), of factors of environment (paratypic factors), and of their interaction in the production of realized human

beings (phenotypes), physicians would still have the task of diffusing this knowledge and of persuading people to act upon it. Mankind, we can be sure, will never attain to full knowledge of disease-prevention, nor will men and women ever live up to the knowledge they possess. The complete prevention of disease and the maximal enhancement of the vitality of all are therefore unattainable ideals; perfection can never be reached, though by aiming at a goal it is more likely to be approached than if our arrows are shot at random into the air. The average duration of human life has been increased some twenty years during the past half century through the well-directed efforts of those who are interested in preventive medicine!

Hygiene and disease prevention are parts of the social functions of shelter and defense, parts that in civilized societies have been largely relegated for performance to the medical profession as a special social organ. In primitive social groups the family had to exercise these functions unaided; as societies grew in size and complexity, and as knowledge of health and disease became widened, it was natural that the responsibility of health preservation and disease prevention should be transferred to those who made a special study of it. Families sought the advice of general and special practitioners of medicine, and towns, cities, states, and the nations established public health services (boards of health; sanitary bureaus) for the performance of those more

general functions that are common needs of social aggregates larger than the family. Among these needs are provisions for quarantine, unpolluted water-supplies, clean streets, safe methods of sewage and garbage disposal, sanitary housing, pure foods (milk, meats, fruit and general market products), wholesome conditions for study in schools and for work in the industries, suitable opportunities for relaxation, exercise and recreation, hospital care for the indigent, and the keeping of reliable vital statistics.

In addition to the private practitioners of medicine and the local, state, and national boards of health and public services, certain voluntary associations have been formed with the idea of promoting the public health in various directions through education of the public and through their influence upon sanitary legislation. Of these voluntary agencies may be mentioned especially the American Public Health Association, the American Association for the Study of Tuberculosis, the Association for the Prevention of Infant Mortality, the American Society for the Control of Cancer, the Society for Social Hygiene, the National Conservation Association, the Life Extension Institute, the National Committee for Mental Hygiene, and the International Health Board. In these associations, physicians and laymen are banded together in a co-operative effort to prevent physical, mental and social diseases.

For these diseases are of consequence not only to those affected by them but also to society as a whole. Persons suffering from physical or mental diseases are as a rule a drag upon society, for, not only are they unable to perform their social tasks efficiently, but, besides, they hinder the work of healthy people and handicap them with the cost of their care, thus affecting injuriously all the social groups to which they are related. Much of the poverty, vice, and crime in the world are due to physical disease or to abnormal mental states. Pathological behavior is due to mind that has been made abnormal through heredity or through pernicious environmental influences. Society must protect itself from the physical disease, the deficient intellect, the uncontrolled passion and the feeble and vicious wills of its constituent members.

The young man entering medicine can, therefore, find a most attractive field for work in public health activities. If he contemplates devoting himself especially to this type of work, he may prepare for practical board of health work, for sanitary engineering, for membership in the U. S. Public Health Service, for journalistic effort devoted to the improvement of the health of the people, for teaching in a school of hygiene, for executive work in one of the voluntary associations referred to or for field work under their direction, for work in a special department of a life insurance company that strives to prolong the lives of those insured, or for the

higher work of research in disease prevention conducted by some public or endowed institute of preventive medicine.

Several of our great universities have established faculties of public health and of hygiene in which aspirants with preliminary medical or biological education may receive special training for the work. The social significance of work in public health and hygiene can scarcely be over-estimated, especially when this work is directed toward the preservation of the intellectual faculties and toward the favoring of normal human desires and conduct as well as toward the prevention of physical disease.

5. The Social Benefits Attributable to Medical Authorship

Medical writers, too, perform an important social function, for they are a part of that great psychophysical communicating apparatus, sometimes known as the "social nervous system," by means of which all parts of society are brought into psychical contact. Through the activities of medical authors and editors, new knowledge is recorded and is, along with older knowledge, diffused from centres of authority to the members of the medical profession everywhere and through them to the larger public. The practice of medicine by physicians and the observance of hygienic rules by the people at large are thus given the opportunity of keeping pace with the progress of medical knowledge.

The communicating channels that mediate between authors and readers consist of scientific reports, abstracts, collective reviews and other matter published in medical journals, as well as of the larger bodies of organized knowledge published as monographs, text-books and "systems".

As an example of the usefulness of such communicating channels, experience with "insulin" may be cited. The Canadian investigator, Banting, working with associates in Professor McLeod's laboratory of physiology, is able to isolate from the pancreas a substance that represents the active secretion of that gland, which is responsible for the utilization of sugar in the animal body, a function that Minkowski had shown to be greatly impaired in the disease known as diabetes mellitus. With one of his colleagues, Dr. Best, he presents a report of his observations and points out their great clinical significance at a scientific meeting and publishes his paper in a scientific journal. Abstracts of this report appear far and wide in various medical journals in Canada, the United States, and soon in all parts of the world. The preliminary report is followed by later articles dealing *in extenso* with various phases of this subject. Scientific investigators and leaders in organized medical clinics are supplied with the substance (known as "insulin") for purposes of animal experiment, on the one hand, and for the treatment of selected cases of diabetes in human beings, on the other. These physiologists and clinicians in turn

publish the results of their observations in other medical journals and soon the body of knowledge on this particular topic becomes so large as to require synthesis (after critical analysis and sifting of the facts) in the form of a collective review. The matter is of such general interest that attention is called to it in the editorial columns of medical journals and in popular articles in the lay press. The results of the use of insulin are found to be so beneficial that arrangements are made for its manufacture on a large scale and at lower cost so that it may be made quickly available to the hosts of sufferers from diabetes in all parts of the world. Every new textbook of medicine and every system of medicine that is published from this time on will contain a longer or shorter article upon insulin and its use in diabetes. All the literature on the subject, catalogued in the Index Medicus and other cumulative bibliographies, is collected in medical libraries, where medical librarians stand ever ready to put interested readers in touch with it. As a result of the publicity given to the subject by all these medical writers, not only are the general profession and the public benefited directly, but a large indirect good accrues to both through the diffusion of a knowledge of the social value of medical research, for this in turn leads to its further endowment. No better example could, perhaps, be chosen from recent progress to emphasize the social value of medical authorship and to illustrate the speedy dissemination of medical facts

by means of the psychical communicating apparatus of our profession.

In the socialization of medical science, medical writers of the most different kinds find suitable opportunity for work. There are needed: (1) the scientific papers and monographs of authors who report (in the various transactions, archives, annals, and journals) the results of their purely scientific and experimental original researches in the general and special clinical and preclinical sciences; (2) the national, regional, state and local medical newspapers such as the *Journal of the American Medical Association,* the *Southern Medical Journal* and the *Boston Medical and Surgical Journal* of our own country, or the *British Medical Journal* and the *Lancet* in England, the *Presse Medicale* in France, the *Wochenschriften* in Germany, and the *Riforma Medica* in Italy; (3) the regularly appearing summaries of medical progress, such as the English *Reviews and Abstracts,* and the various *Centralblätter, Jahresberichte,* and *Ergebnisse* that were so carefully edited in Germany before the great war, and since the war are gradually being rehabilitated; (4) carefully written text-books, of which Osler's *Principles and Practice of Medicine* and Garrison's *Introduction to the History of Medicine* may be cited as admirable examples; (5) the larger "systems" of medicine, of surgery, or of the special branches—composite works produced by groups of specialists under the editorship of some influential

leader of the profession; and (6) bibliographic books and journals, such as the *Index Catalogue of the Surgeon-General's Library,* the *Index Medicus,* and the *Quarterly Cumulative Index* of the American Medical Association. Those who contribute to the production of any one of these types of medical publications do something to further the socialization of medicine.

The work of medical editors deserves especial commendation, for these editors renounce many other privileges in order to serve their colleagues and the public. They encourage the publication of the best medical papers; they improve the style of younger and less experienced writers by their helpful criticism, and they reject papers that are of no value or papers that are obviously meretricious. Through their editorial columns, they direct, by their own comments or those of the informed whom they invite to contribute to them, the medical thinking of the rank and file of the profession toward the best things in the medicine of the time. In all these ways they perform a most valuable service both to medicine and to society at large. As Garrison says:—"The highest function of the medical journalist to-day is to introduce new currents of scientific ideas and to keep them in circulation." One need only mention the editorial work of the late John S. Billings, George M. Gould, that of the late Frank P. Foster, that of Henry M. Hurd of the Johns Hopkins Press, or that of the editors of the *Journal of*

the American Medical Association, Dr. George H. Simmons and Dr. Morris Fishbein, to remind those who are familiar with medical journalism in America of the meaning and value of the activities of alert, high-minded, and conscientious editors in searching for the good, in stimulating the mediocre to improvement, and in suppressing the actually bad among medical writers and their manuscripts.

Young men now entering the medical profession will find still larger opportunities for serviceableness in medical writing than those that were open to the medical men who preceded them. For as medical knowledge grows and as medical technique expands, as the average ability of the men entering the profession improves, and as the professional training of novitiates becomes ever more rigorous and prolonged, the demand of the market for the different types of medical publications already referred to will certainly increase and, doubtless, some types not yet devised will make their appearance. Each generation must provide its own special "texts" and "systems" and must find out how best to satisfy its own needs for current medical literature. The *Flint* of a few decades ago was supplanted by the *Osler* of the "nineties"; the *Hilton Fagge* of my student days has given away to *Oxford Medicine* and other contemporary "systems". The authors and editors of the medical writings of to-morrow are now in the making. May the illustrious examples of those whom they succeed stimu-

late them to productions of even greater distinction and renown!

6. The Social Function of Medical Organizers, Medical Executives, and of Medical Statesmen

Before leaving the services renderable by the medical profession to society, something deserves to be said regarding the social functions of medical organizers, medical executives, and medical statesmen.

Medical Organizers.—In medical undertakings involving co-operation, plans should be drawn that will give them an orderly structure, and arrangements should be made for the proper working of the whole through the balanced functioning of the interdependent parts; in other words, suitable organization is required if the undertakings are to be successful. This is true of the medical practitioner's office; of medical practice in private groups, in hospitals, sanitaria and asylums, and in the government services; of medical teaching faculties; of institutes of medical research; of medical associations of all sorts; of medical examining boards; of committees on medical legislation; of councils on medical education and on the prevention of quackery; and of the various campaigns that aim at the improvement of the public health.

Every medical man has to meet smaller or larger problems of organization, and his success or failure

is largely determined by his manner of solving them; but in the greater co-operative undertakings of the profession, courageous men of wide vision and of systematic mind are required to plan and to choose the proper persons to operate them. The devising of such enterprises and the arranging for their promotion is the special social function of *medical organizers;* and, unless the function of organization is adequately represented in each generation, medicine may be stagnant or may even move backward.

Some men possess in extraordinary degree the talent for organization, whereas others are more suited to the work of execution, and still others are notably lacking in both organizing and executive ability. It is upon the first group that we must depend for constructive intervention in the turning wheels of medical vicissitude.

Examples of distinguished medical organizers readily occur to the mind on any survey of the history of medical progress. In our own country, society owes much to men like Johns S. Billings, who was the principal founder of the Library of the Surgeon-General's Office at Washington, and who also planned the Johns Hopkins Hospital; like Nathan Smith Davis, through whose efforts the American Medical Association came into existence; like William Pepper, who edited the first great American *System of Medicine* and who, as provost of the University of Pennsylvania, did much to improve facilities for medical education; like the

Mayo brothers, who set the example in the organization of private group practice; like Ludwig Hektoen, Simon Flexner and Theobald Smith, who have shown us how to plan and to conduct institutes of medical research; like Robert Fletcher, who with Billings brought order out of the chaos of medical bibliography; like Arthur Dean Bevan, through whose wisdom the Council on Medical Education has been so serviceable in supporting improvements in medical teaching and examining; like Abraham Flexner (though not himself a physician), whose trenchant criticisms and constructive recommendations have been productive of important reforms in medical education; and like Colonel William Crawford Gorgas, whose constructive plans and strategy were responsible for rendering Havana free from yellow fever for the first time in 150 years and for achieving the triumph in sanitation that made possible the construction of the Panama Canal and converted the Canal Zone from a plague spot into one of the healthiest communities that we know.

Medical Executives.—Organizers who plan and who choose executives are sometimes great executives themselves (as were Billings and Gorgas), but they are not always the persons who are best suited to the work of making plans effective. On the other hand, there are many men who are excellent in the management of men and materials in the realization of plans that have been already drawn but who are lacking in any great activity for pattern construc-

tion. They are to the organizer what the builder is to the architect. Such *executives* perform a most useful social function in the workaday world of medicine, even though they may require to be controlled by true organizers or to be guided through the influence of boards of wise advisers.

Among the opportunities for executive work in medicine may be mentioned especially the activities of superintendents and assistant superintendents of hospitals, of sanitaria, and of asylums for the insane, as well as those of the deans of medical schools, those of medical officers in the U. S. Army, U. S. Navy, U. S. Public Health Service, and U. S. Veterans' Bureau, those of the medical directors of life insurance companies, those of the directors of boards of public health, and those of the executive officers of the various medical associations and campaigns.

Such executives are partly born, partly made through special training. Most frequently, perhaps, they are of pyknic habitus and of syntone temperament. They should be men of strict integrity, of pleasing personality, of enthusiasm and of wide sympathy, but they should possess firm wills and should exercise rigid self-control. They should know how to choose their assistants, and how to negotiate with men in order to arrive at agreements. A good understanding of human nature in general is essential for successful management, for he who will lead men must know their nature and their habits, and if he will persuade them he must be

familiar with their aims, their qualities of strength, and their points of weakness. Though, in general, a man of dispatch, the wise executive will know when to be patient, for, as Bacon said, "in all negotiations of difficulty, a man may not look to sow and reap at once; but must prepare business, and so ripen it by degrees."

Medical Statesmen.—The civilization and culture of any given nation depend, as Descartes said, upon the degree in which true philosophy flourishes in it, and accordingly "to contain true philosophers is the highest privilege a state can enjoy." And to explain what he meant by philosophy, he went on to say "all philosophy is like a tree, of which Metaphysics is the root, Physics the trunk, and all the other sciences the branches that grow out of this trunk, which are reduced to three principal, namely, Medicine, Mechanics, and Ethics." Writing of Medicine, Descartes continued: "The preservation of health is without doubt, of all the blessings of this life, the first and fundamental one; for the mind is so intimately dependent upon the condition and relation of the organs of the body, that if any means can ever be found to render men wiser and more ingenious than hitherto, I believe that it is in Medicine they must be sought for. It is true that the science of Medicine, as it now exists (1637), contains few things whose utility is very remarkable; but without any wish to depreciate it, I am confident that there is no one, even among those whose pro-

fession it is, who does not admit that all at present known in it is almost nothing in comparison of what remains to be discovered, and that we could free ourselves from an infinity of maladies of body as well as of mind, and perhaps also even from the debility of age, if we had sufficiently ample knowledge of their causes and of the remedies provided for us by Nature." Obviously, then, the promotion of the science and art of medicine is an essential condition of the progress of civilization and of the advancement of human culture.

Here and there men of large vision appear who are profoundly impressed with these facts, who see better than their fellows the contemporary needs of medical practice, medical teaching, and medical research, and who strive, almost passionately, to further civilization by favoring the conditions that improve the practical-technical skill of physicians, that increase the scientific knowledge upon which that skill depends, and that lead to better laws and better political institutions to render the state-needed activities of physicians and scientists secure. Such men may well be designated "medical philosophers" or "medical statesmen", and though their number in any nation at any given time is small, those few perform a service to society of the very highest value.

Medicine must never be satisfied with past achievements; as soon as one ideal is realized, a new goal must be sought. For medicine, like a nation or

an individual, needs to hope and to yearn in order to keep itself alive. It is the function of the philosophic medical statesman to confront us with new problems—physical, mental, educational, industrial, social, international—that medicine can help to solve, to compel our interest in them, and to find men, materials and funds for the work of solution.

That America will supply her quota of such medical statesmen there can be no reason to doubt. The names of Dr. Charles M. Eliot of Harvard University and of Dr. William H. Welch of Johns Hopkins University may safely be mentioned as those of philosophic medical statesmen of the type referred to. They have set an example of ardent interest in the welfare of the practising medical profession, of stalwart support of reforms in medical education and legislation, and of profound belief in the liberal endowment of medical research. With tongue and pen they have spurred both the profession and the public to wise decisions and to fruitful activities. It will be well for our nation if succeeding generations shall produce a worthy line of successors to these two great men.

In Europe, too, the beneficence of the work of medical statesmen has had many striking examples. Think, for instance, of the influence of the great Austrian surgeon, Theodor Billroth, not only in his specialty, but, and especially, also upon medical education through his fascinating treatise *Ueber Lehren und Lernen in der Medizin.* Or, read Ste-

phen Paget's biography of that wonderful, many-sided Scotchman, John Hunter—the founder of experimental and surgical pathology, the pioneer in comparative physiology and experimental morphology, a great surgeon and syphilologist, the first scientific student of dentistry—for a British example. Or, peruse the pages of that charming life of Louis Pasteur, written by his son-in-law Vallery-Radot, for an account of the benefits to the state and to the world of the vision and work of a great French chemist who, though not educated in a medical school, became none-the-less a medical man of the philosopher-statesman type. Or, finally, turn to Fielding Garrison's history or to W. Becher's biography, and ponder over the activities of that great Pomeranian pathologist and politician, Rudolf Virchow, the founder of cellular pathology, the friend of democracy and freedom, a violent medical reformer, a most inspiring whole-souled teacher, a vigorous protagonist of everything that he believed to be true, and as stalwart an opponent of what in his judgment was error; Germany in him, like France in Pasteur, contributed to medicine an almost ideal representative of high-minded and valiant statemanship.

Other examples of medical statesmen in our own and other lands will readily occur to the mind, but the names mentioned will suffice to emphasize the high significance of the work of medical statesmen for the general welfare of society. Men of strong

intellect, of vivid imagination, and of determined will, but with hearts that are filled with longing for the betterment of mankind and of the conditions in which human beings live—these medical statesmen, with their view of the world from the medical standpoint, do much to advance knowledge and to improve skill; but they perform an even more important function in that they help to fashion the will and the emotions of the human race and leave their indelible impressions upon its character.

CHAPTER III

II. The Personal Rewards and Satisfactions of Medical Workers

(1) Physical; (2) Economic; (3) Social; (4) Intellectual; (5) Æsthetic; (6) Ethical.

The ambitious youth of high aspirations when deciding upon a career is not satisfied with one that will yield him a mere livelihood or sense of security; he is influenced also by various other ideas of "success" and of "rewards." [1] Thus one man may desire riches; another may be keen to acquire knowledge and to extend it; a third may be attracted by possibilities for the attainment of influence, power, fame, or social prestige.

It is, doubtless, what are called the "egoistic" motives (those that impel one to acts that favor individual welfare) rather than what are designated the "altruistic" motives (those that lead to activities that favor the welfare of others) that are paramount in most young men when they are considering the kind of occupation upon which they will

[1] *Cf.* Cabot, R. C. *Training and Rewards of the Physician.* Philadelphia and London, J. B. Lippincott Co., 1918; *also:* Finney, J. M. T., *The Physician. In:* Scribner's Vocational Series, New York, 1923.

embark. This, however, is not a serious matter, for in our complex social life, the person who does what is really best for his own welfare makes also his highest possible contributions to the welfare of others. Even what is sometimes called self-sacrifice may be, simultaneously, self-preservation, when the sacrifice is of the lower self for the sake of a higher, more ideal, self, for each person is a congeries of more or less conflicting selves.

It is not natural for a youth to begin work deliberately with the idea solely of serving humanity, of benefiting the human race; on the contrary, his instincts impel him rather to strive to satisfy certain personal desires—the desire to be well and strong, the desire to make a living and to accumulate money for comforts and perhaps for luxuries for himself and a family, the desire to know, the desire to command, the desire to stand well with his fellows (to win their approval and to avoid their disapproval), the desire to enjoy beauty, and the desire to do right. As he goes on living and striving, he finds that these desires, though on the whole his best friends, may be in some respects inimical to his welfare. Though he cannot achieve success or happiness if they are too much thwarted, he finds that for real success and genuine happiness one or another of them must be curbed at times in order that others may be legitimately satisfied.

Here morality appears, as reflective choice enters into conduct. Reason to some extent controls tem-

perament when a decision between alternative possibilities (one better, one worse) becomes necessary. In the very process of living, acting, and seeking satisfaction for his desires, man learns not only to use his reason to overcome obstacles but finds also that his character is gradually moulded by his modes of reaction to his physical and social surroundings. It is often late that he discovers that while acting in his own interest he has at the same time been acting for the welfare of his community. Indeed, I am not sure, but that he who works for the gratification of his own wants (income, family, knowledge, power, fame, etc.) may not often do a little better by "society" and "humanity" than he who thinks predominantly of the weal or woe of others. Goethe once remarked: "I never asked myself in my profession as a literary man: What do the masses want, and how can I serve humanity? But I always simply endeavored to make myself wiser and better, to enrich my own personality, and then always to say only what I had found to be good and true." May not this wisdom of the literary man have some application also to the life and work of the physician? I must agree with John Dewey who has somewhere said: "There is a sense in which to set up social welfare as an end of action only promotes an offensive condescension, a harsh interference, or an oleaginous display of complacent kindliness."

"Selfishness" and "unselfishness" need not, however, imply any contradiction in terms. Man can be

neither purely egoistic nor purely altruistic; he is, and must be, both. But as we have in the preceding section considered separately the services renderable to society by medical men, let us now turn to the special consideration of some of the personal rewards and satisfactions that medicine may yield to those who choose it as a life-career.

Though personal wants vary in strength and proportion in different individuals and though each person differs from every other in the exact conception of the way each of his desires can best find satisfaction, medicine as a career provides fairly well for the reasonable gratification of the wants of its votaries. Such gratifications of wants, the foreseen consequences of a successful medical career, may be utilized to influence present deliberation and to stimulate ensuing activities.

(1) Physical Satisfaction of a Life Devoted to Medicine

Arnold Bennett, in his *How to Make the Best of Life,* makes the remark: "Generally speaking, happiness is the consequence of health, not of righteous living and a clear conscience. The philosopher has said: 'Be good and you will be happy.' It would be more exact to say: 'Be healthy and you will be happy.' Bad health is far more destructive of contentment than a bad conscience."

In any case, health, or soundness of body, is the first of human wants; and men and women who fol-

low medical careers should be better able than others to gratify this want. For physicians have to study the laws of health and the causes of disease, and they are daily employing what has been discovered concerning persons in good health and persons in bad health (and their causes) in the investigation of their ailing patients in order to aid them in recovering. Their professional work compels them constantly to be engaged in estimating the physical assets and liabilities of a variety of human beings, some of whom are sick, some of whom are well but who desire to be told "how to live" in the best way to avoid illness in the future.

In his work, the physician has manifold opportunity to observe the influence of hereditary tendencies on the one hand and of favorable and unfavorable environmental conditions on the other. He learns how to "size up" the constitution and how to recognize the effects of various external conditions. And in the prescriptions he gives for the ordering of life, he keeps in mind the possibilities for the future and attempts to secure for his patients what is good and to avoid what is bad in the way of consequences. He tries to make the desirable future of health that he pictures to those who consult him serve to give meaning to their way of living in the present, and to stimulate them when necessary to remedial action.

In practice, the physician cannot avoid becoming enormously impressed with the value of preventive

measures, and it would be strange, indeed, if he did not make use of such measures in the conduct of his own life. He will, for example, have the advantage of knowing what, when, and how to eat. He has been taught the importance of a well-balanced food-ration—one which contains the proper amounts and proportions of proteins, carbohydrates, fats, salts, water, and vitamines. He has learned how to calculate the ideal weight of persons of different heights and at different ages, and how to modify diet, exercise, and rest, when this has not been reached, or when it has been exceeded. He knows that, on the one hand, undernutrition predisposes to tuberculosis and to nervous breakdowns, and that, on the other, overnutrition predisposes to obesity, to diabetes, to gout, to high blood pressure and to failure of the heart muscle. He has frequent opportunity to observe the baneful effects of food bolted without mastication, of the ingestion of large quantities of rich foods at bed-time, and over-indulgence in tea, coffee, alcohol, condiments and confections. He has been called upon to treat indigestion in families in which worries brought for discussion to the table maintain an atmosphere of irritation or depression, or in which, through poverty, ignorance, or neglect, the meals have been badly prepared and eaten in ugly or unattractive surroundings.

He will, too, have learned the hygienic value of cleansing and stimulating baths, of the proper care of the hair, nails, and teeth, of clean and attractive

clothing, and of proper elimination of waste products from the body. He has to teach many who should, but have not, been taught at home, the joys of the cold plunge or shower on rising and the sanitary benefits of an occasional warm bath with soap on retiring. His observation of patients crippled with arthritis due to infected teeth has led him to prescribe regular visits to dentists as a preventive measure, and has emphasized to him the gravity of permitting small foci of infection anywhere in the body (tonsils; teeth and gums; paranasal sinuses; prostate; gall bladder) to go neglected. The association of carefully attended hair and nails, of clean linen and of suitable attractive clothing with a sense of well-being and of self-respect in his patients can scarcely have escaped his notice either, and he has often recalled with amusement the jocular saying of Emerson: "The consciousness of being well-dressed is capable of yielding satisfaction that religion is powerless to bestow." The frequency of ills due to faulty elimination of waste products are ever being brought to his attention, and, in his practical therapy, he has learned to treat constipation by getting rid of its causes and to teach the gouty to eschew sweetbreads, port and champagne.

He will, further, be all-too-familiar with the men and women of middle life who have suffered injury from lack of regular physical exercise in the open air, and will have contrasted them with the persons of physical vigor, good color and high spirits, who

have made it a rule to spend fifteen minutes before breakfast each morning at setting-up exercises, to walk two hours a day, to ride horseback, or to play golf, tennis, or some other out-of-door game with regularity. He often wonders how the evil consequences of this prevailing sin of physical torpor can be sufficiently emphasized to the people at large, for despite the attention paid to athletics in the schools, he sees that a very large proportion of Americans, especially women, and men who work with their brains, neglect regular and systematic muscular activity to their great detriment.

He must have observed, too, the physical satisfactions that, in his patients, have been attendant upon congenial, well-ordered occupational work. Men and women, he has noted, who work at what they like to do, and who plan their work carefully, not only are more successful than others, but they enjoy, too, on the average, better health. Whereas, when work is not self-chosen, is disliked, or is wholly unsystematic, the performer is not likely to achieve any marked success in it, and his failure is prone to be accompanied by unhappiness, by mental depression, and by physical ill-being.

Finally, he has seen the value to his patients of proper sleep, rest, and recreation. How often has he listened to miserable beings who were tortured with insomnia, some of them the victims of a depressive psychosis, some of them sleepless because of disobedience to ordinary simple hygienic rules?

How often, too, has he seen the man of fifty who has "arrived" and who desiring to relax and to enjoy himself does not know how, because he has had no genuine interests outside his business or profession, or because he has become the slave of austere habits that have too greatly separated him from common life, or because he has not realized that the greatest total satisfaction, the only real success, in life depends upon the full and successful exercise of all the faculties in an elastically balanced way. Further, how often has he seen high blood pressure or the symptoms of other degenerative diseases appear in middle life in men who have "burnt the candle at both ends", men who have worked passionately to succeed in their occupations but have failed to take the rest, the vacations, and the recreation that were necessary for the preservation of their health, and, *vice versa,* how he has enjoyed congratulating veteran workers of 65 or 70, still hale and hearty, who have worked hard but who have wisely interlarded work with rest and recreation, men who have known how to utilize holidays and hobbies to their physical and mental benefit, and who, in addition, approaching the end of life, have learned how to draw upon the abundant resources of art, literature, science and society for relaxation and pleasure.

In all these hygienic observations of the physician, he will have been struck with one feature in particular, namely the force of habits, that is to say, of certain acquired and more or less fixed modes of

response of the human being to his environment. He will, too, have had brought home to him repeatedly the fallacy of thinking that the bad habits of patients can be changed merely by telling them wherein they are harmful to health. Knowledge of right conduct is a wholly different thing than the practice of it. Even knowledge of the need of change combined with the desire to make the change will not suffice to break or modify a harmful habit. Intelligence must be set to work to discover the means through which the desired result may be obtained and to devise the procuration of those means. Little success can be expected from the direct effort of the will. Men cannot be made "virtuous by edict and prohibitory mandate", even when they themselves are the authors of the edicts and mandates. Physicians have learned that to alter the bad habits of their patients—be they those of insomnia, of constipation, of drug-addiction, of overwork, or of sloth—they must inquire into causes, they must devise the means for altering present activities of the patients in the direction of habit modification, and they must become expert in the practical-technical methods of subtly inducing patients to begin to take those intermediate steps that lead from habitual error to sanitary rectitude. A patient may have the goal of better health held out to him as an inducement to reform, but this will be of little value unless the physician instruct

him in precisely what to do next in the existing situation, help him to employ each link in the chain of means that extends from the habit as it is to the habit that will be after intelligent control has been established.

But what has all this to do with the physical satisfaction of the physician himself? What bearing have these comments upon his own health and happiness? Simply this, that the physician who desires good health for himself has better opportunities for preserving it, or for recovering it if it be temporarily lost, than have most other people. For his education and his experience combine to give him first a knowledge of the causes of health and disease and second an acquaintance with the practical-technical methods of arranging for that co-operation of the living human organism with its environment that is necessary for health.

Not only is it a physician's privilege to adopt all well-known hygienic rules of which he informs others in the ordering of his life, but he knows the importance of taking stock from time to time of his physical assets and liabilities so as especially to modify physical, mental and social habits as conditions gradually change. At the time America entered the great war, Colonel Gorgas, wisest of sanitarians, then the Surgeon-General of the United States Army, arranged for a diagnostic survey of his own person by a practising group, feeling it

both a privilege and a duty to make and to maintain himself as physically fit as possible for the greatly increased responsibilities that had suddenly devolved upon him. Like this illustrious example, many medical men, nowadays, follow the practice of undergoing systematic physical and mental examination for purposes of health preservation.

The medical man can have the satisfaction, too, of access to all that is best in personnel and equipment when he needs medical aid for himself or for a member of his family. Should occasion require, his knowledge of medical men and medical institutions should ensure the choice of competency in the one and fitness in the other.

Finally, the physician who preserves his own health and vigor through a long life into advanced age, thwarting none of his fundamental instincts, but, on the contrary, continuously enriching his personality and strengthening his character by expansion of his interests and by progress in intelligent self-control, has had not only the satisfaction of the living, itself, of a full and free life, but he has had the additional pleasure of serving as a stimulus to others by the setting of a wholesome example.

Few of us in medicine, I fear, make the most of these opportunities for physical satisfactions that the medical life affords, but if each of us would give them occasional consideration, it would go far toward stimulating us further to profit by them.

(2) Economic Rewards of the Medical Profession

The medical and other professions, just as much as the occupations of the carpenter, the butcher and the candlestick-maker, had their origin as a part of that division of labour that was the slow and gradual consequence of the propensity of human nature "to truck, barter, and exchange one thing for another." Every man throughout his whole lifetime requires for the business of living the co-operation and aid of a great number of his fellow-men, for no one can in civilized society remain independent of others. Adam Smith put it well when he said: "Man has almost constant occasion for the help of his brethren, and it is in vain for him to expect it from their benevolence only. He will be more likely to prevail if he can interest their self-love in his favour, and show them that it is for their own advantage to do for him what he requires of them. . . . It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest. We address ourselves, not to their humanity but to their self-love, and never talk of them of our own necessities but of their advantages. Nobody but a beggar chooses to depend chiefly on the benevolence of his fellow-citizens."

Members of the medical profession, like other members of society, are producers of something to

sell, something that has a market value. That something consists not of material goods but of medical services; it is by barter or sale of these services that the medical man obtains from others the means for supplying himself and his family with the greater part of the goods and services of which he and they in turn stand in need. For the propensity to barter and exchange has made it possible for the most dissimilar persons to be of use to one another; the goods and services of all are, as it were, turned into a common store, where each may buy "whatever part of the produce of other men's talents he has occasion for."

The pecuniary rewards of different employments are very unequal and for very good reasons, among the principal of which, as Adam Smith also pointed out, are (1) the agreeableness or disagreeableness of the occupation, (2) the inequalities of the difficulties and expense of learning them, (3) the constancy or inconstancy of demand for the goods or services produced, (4) the small or great trust that must be reposed in those who exercise them, and (5) the probability or improbability of success in them. The rewards of medical work are only in part pecuniary; and that part is, as a rule, an under-recompense. Young persons ambitious to make large amounts of money will find the field of medicine unsuitable for their purpose. It is not often that a member of the medical profession becomes a rich man from the sale of his medical services; the rare physician who

accumulates large amounts of money does so, as a rule, by engaging in enterprises other than those of his profession. A large part of the reward of medicine, as of all honourable professions, consists of honor and the enjoyment of the work itself.

That the financial rewards of medical practitioners should be somewhat larger than those of many non-professional workers is a proposition that can easily be defended. For, in the first place, the personal qualities for successful work in medicine include the possession of more than mediocre physical and mental powers; in the second place, the education now required for membership in the profession is so very long (college of liberal arts; medical school; hospital) and so very expensive that it is only occasionally that a fair return on the time, energy and money expended in securing it can be gained before the 35th or 40th year of life; in the third place, physicians and surgeons have very great trust reposed in them, for nothing is dearer or more important to most men than the lives and the healthful living of themselves and their families, and those to whom the preservation of these precious things are confided dare not be inferior persons, nor should their rewards, pecuniary and other, be less than enough to ensure a material and social position consistent with the importance of the trust; and, in the fourth place, and finally, success in medical careers is very uncertain, for where one attains to notable proficiency and reaps a liberal reward, there may be

ten or twenty who make little more than a mere livelihood, or who, failing to do this, are compelled to turn to other occupations for subsistence. Upon the additional argument that medical practitioners render many services to people who cannot afford to pay for them and that they should therefore receive a larger compensation from people who can afford to pay than would otherwise be expected, I lay some but not much stress; for charitable and semi-charitable work of this sort not only brings its own special rewards to the practitioner in the satisfactions of his feelings of human sympathy and in those of yielding to his humanitarian impulses, but it increases his professional experience and widens his reputation, thus adding to a capital that in time improves the services he renders, makes them more widely known, and thus brings them more into demand and makes them more highly valued.

The professional services of physicians should for social reasons, be adequately rewarded, for, otherwise, the number of persons entering the profession will be too small, the quality of the brains that engage in medical work will be unequal to the tasks imposed upon them, and the facilities for the highest types of medical practice cannot be provided. Liberal fees for surgical operations have done much to improve the technique of surgery and to attract better brains to its practice. Society must see to it that the rewards (financial and social), of physi-

cians, shall be sufficient to ensure a continuous recruiting of the profession by suitable men and an adequate preparation and differentiation of these men for the several kinds of medical work, including not only that of general and special practice, but also that of teaching and that of research.

Fortunately, many young persons are attracted to medicine despite the rather meagre financial rewards it offers. Interest in biological and medical problems and observation of the love and admiration of the public for those who excel in gratifying the medical and surgical wants of patients, in the teaching of medical students, and in the making of medical discoveries and inventions, doubtless go far to compensate in many superior minds, for modesty, or even scantiness, of money-income. So eager are some men to enter the medical profession that as medical students they may borrow the whole, or a large part, of the money required to defray the expenses of a medical education; others earn enough as they go along by working during vacations or by engaging in some form of student service during sessions. The courage, industry and endurance of some of these students of limited means has been very inspiring, though it is to be feared that, in certain instances, such self-imposed strain has been greater than was warranted and has been followed by results that were lamentable. Rather than overtax himself, and suffer a handicap, perhaps, for the rest of his life, through endeavoring to complete his

course within the same period with those who do not have to earn their way, it might be better for the impecunious student to prolong the time given to his studies and to postpone his graduation by a year or two. I have known more than one poor man who has paid too great a price for a medical education compressed within too short a period; the penalties exacted have been such that I would fain warn anyone from unnecessarily and rashly running the risk of incurring them. It is true that some of the most prominent and most useful members of our profession have worked their way through college and medical school; indeed, their experiences, when too great handicaps could be avoided, have not been without advantages for their subsequent careers.

The incomes of medical men vary much not only in different branches of the profession but among those of different ages, experience, and reputation, engaged in the same kind of work. It is difficult to cite figures that are other than approximations of actual incomes. In general practice in country districts and smaller towns, the physician's income may be below $1000, or may be as large as $5000 or more per annum, whereas in larger towns and cities the G. P.'s income probably averages between two and five thousand dollars, though a few successful general practitioners may make incomes of ten or fifteen thousand dollars per year or even more.

In the practice of the medical and surgical special-

ties, the incomes, though they begin later because of the longer preparation required, are somewhat larger. Surgery is the most liberally rewarded; though the young surgeon may have to go through a long period of training and waiting, once his reputation has become established as a skilful operator and as a practitioner with good surgical judgment, he is assured of at least a comfortable income, which may, in some instances, fall within the higher reaches of the income-tax schedules. Obstetrics, internal medicine, and the other specialties are as yet under-recompensed as compared with surgery.

Work in internal medicine, which requires the mind of a "pluralist" rather than that of a "specialist" for its successful cultivation, has been thus far only moderately rewarded, though it is probable that as the public grows more enlightened the fees for consultation and for general diagnostic surveys by experts will be increased so that the total income of a worthy internist will more closely approach that of the good surgeon.

The late Sir William Osler, a brilliant example of the best type of consulting internist, one whose interest in economic satisfactions was far outshadowed by that in other rewards, in chats with the young medical men who flocked to him, often emphasized the length of the period of waiting and of impecuniosity that the young internist must be willing to live through. In his address, *Internal Medicine as a Vocation* (1897), he thus referred to

the three periods of the physician's life: "From the vantage-ground of more than forty years of hard work, Sir Andrew Clark told me that he had striven ten years for bread, ten years for bread and butter, and twenty years for cake and ale; and this is really a very good partition of the life of the student of internal medicine, of some at least, since all do not reach the last stage." And later (1905), in his *Farewell Address to American and Canadian Medical Students,* that wise counsellor pointed out the dangers of the "waiting period" of the first five years after graduation: "That fateful first lustrum ruins some of our most likely material. Nothing is more trying to the soldier than inaction, to mark time while the battle is raging all about him; and waiting for practice is a serious strain under which many yield. In the cities it is not so hard to keep up: there is work in the dispensaries and colleges, and the stimulus of the medical societies; but in smaller towns and in the country it takes a strong man to live through the years of waiting without some deterioration." The opportunities for continuance of study, of supervised practical work, and of research are greater now than when he wrote, so that there is less excuse than formerly for stagnation during the waiting period.

A young man who desires to practice does well to put himself in the way of practice, but at the same time to continue to work with energy in dispensary, hospital, or laboratory for self-improvement pend-

ing the time when practice shall drag him away from such work; here, as so often elsewhere, the man who attempts to save his life financially shall lose it. To the man who gives himself freely to the work of the clinic, or of the experimental laboratory, in his early years, who does not "ladle out his energy with a teaspoon," practice will, if he desire it, make due acknowledgment later.

Even if practice be started in the country where there is no hospital to do volunteer work for, or no laboratory in which to experiment, the young physician will find it a good investment to use his early savings for new medical books or instruments and for the expenses of frequent short visits to a medical centre for refreshment; not later than the fifth year after graduation, he should not hesitate to make the expenditure required for a three months' course of post-graduate study in some great clinic of his choice, for, to cite Dr. Osler again, "*Grey cortex* is the only gold mine in which the physician should invest!"

The rewards of society for the expenditure of energy in medical study and training seldom come immediately; they tend to lag behind, sometimes for ten years, usually at least for five. Young men work hard and are paid but little at the time: later, as older men, there may be compensation. That is why the young man should think in very long, not in short, periods. What Arnold Bennett has said with regard to financial rewards in business life

applies with equal cogency to those of medical careers: "A man advanced in life may seem to be overpaid for what he is doing at a given moment. But at that moment he is, actually, being paid for what he did years earlier. And when we see, as we not seldom do, old men apparently obtaining large salaries for light labour, we should bear this in mind. What they are being paid for is their reputation, their reliability, their experience, their reserves of skill and force ready for emergencies which may arise."

Not all members of the medical profession avail themselves of the full economic rewards that their work makes possible for them. When this failure depends upon unwillingness unfairly to exploit patients or institutions, it is something to be proud of. When it is due to contentment with a moderate income for the man and his family because the sacrifice of money rewards makes feasible the gaining of still higher satisfactions of himself and his family, it can be only praiseworthy, provided, of course, that the totality of rewards be sanely equilibrated.

It is not wrong, rather it is admirable, to deny harmful luxuries to one's self, to one's wife and to children for the sake of the satisfactions yielded by medical study or medical philanthropic work; the right kind of wife, like Isaphaena, the helpmate of *An Alabama Student,* will always be willing, even glad, to bear her share in the sacrifices thus made,

and the children, even if temporarily dissatisfied, will really be better off and will ultimately, perhaps, be grateful.

It is not right, however, too much to deny a wife and children the normal privileges and pleasures of their station for the selfish indulgence of a husband, even in honor, in fame, or in gratitude; this is, in my opinion, distinctly blameworthy. I have heard of one surgeon who had a large clientele and who made it a practice after operating upon a person of small means to present the convalescent with a sum of money equal in amount to that of his usual fee for the operation; I was naturally impressed with this man's generosity, but approval turned into disapproval when I learned that at his death his children had had to work unduly hard and to save in order to pay off a mortgage he had placed upon his house, and that some of his wan, invalid children had been compelled in their illnesses to seek aid from charitable friends. That man had a false sense of proportion in his judgment of values! The physician should remember to be first a man, and, afterwards, if he can, a productive scientist, or a generous philanthropist!

Nor is it right to be deprived of the legitimate economic rewards of one's professional work through negligence in the organization or management of its business side. Some physicians pride themselves on keeping no books (the income-tax law has now remedied this), or on never sending a bill for their

services; they have themselves to blame for any suffering contingent upon such false pride.

It is the duty of every physician, as it is of every other man to attempt, during his active period of work, not only to defray the expenses of living for himself and his family on a scale commensurate with his station, but also to provide, in addition, a competency for the rainy days of disability or age, and for the care of the dependent members of his family after his death. Medical careers can, as a rule, so be run as to provide, barring accident, such a competency by the 50th or 60th year of life, stipulating always that those who run them order their lives and control their budgets with foresight and with prudence.

For the attainment of such economic competence, two habits are essential: first, the habit of steady work, and, second, the habit of saving money; without industry and frugality, no physician dare expect to attain to financial independence at 50 or 60. There are, unfortunately, a good many medical men with much natural capacity and with good medical education who, owing to sloth, never turn their capacities and their training to proper account, and there are many others who always work industriously and make good incomes, but who spend all that they make each year, saving nothing; at 50 or 60 should such men die suddenly or become disabled through illness, their families, long accustomed to a liberal scale of living, suddenly find themselves des-

titute and called upon to face severe hardship. Indolence and prodigality are vices that exact penalties not only of those who are addicted to them, but also, too often, of their innocent wives and children; indeed, to be guilty of these vices is harmful to the community at large—"every prodigal is a public enemy and every frugal man a public benefactor."

Just as soon as possible, every young medical man ought, therefore, to commence saving money and he should make saving a continuous policy. Even when his income is small, he should arrange his budget so as to save a part of it, for it is at this early period of his career that he must form the habit of saving if he is ever to form it. Too often the young man thinks: "The amount I save now is too small to be worth while; later on, when I am making a larger income, I shall begin to save." This is the error that so often leads to disaster; he should not fall into it, but should start saving when the amounts that can be saved are very small, for it is the habit of saving that counts, not the amount saved.

Let the young medical man, therefore, control his expenditures so that he can deposit in the savings bank each week, or each month, at least a small sum. When the deposits total $500, or $1000, he may use them to buy a bond, one that a reliable banker assures him is a high-grade investment security, not a speculative bond or stock.

Speculative financial ventures are not for young medical men; no one should speculate who cannot

afford to lose what he stakes. Moreover, speculation is a business, by itself, that demands for its profitable conduct the expenditure of as much time and energy as any other business. It is obviously incompatible therefore with early professional life, when the youth should be throwing himself vigorously and whole-heartedly into his medical work.

But the temptation of making money easily is very hard to resist. I should not care to estimate the percentage of physicians who, at one time or another, have been lured by the siren of big profits in gold mines or oil fields, or who have bought speculative shares in the stock market, without careful investigation, merely upon the "tip" of some well-meaning friend or acquaintance who was "sure that the stock would rise in price." It is humiliating, also, to learn that medical men are regarded as "easy marks" by unscrupulous promoters, and that great numbers of physicians' names are on what are known as "sucker lists," names to whom circulars advocating the purchase of worthless securities may profitably be sent.

There have been a few medical men with a flair for finance who in middle, or later life, when they could afford to do so, have become successful speculative investors, buying good bonds and the stocks of excellent companies whose business was forging ahead after the end of the depressive phase of a business cycle (say when pig-iron production was lowest), selling them again later on when the stock

market was booming and the future to most people had a roseate hue, and placing the proceeds in safe short-term securities until the end of another business panic afforded the next favorable opportunity to buy. But such men are rare; even the wisest of them sometimes "overstay the market"; and there is probably none whose selective instinct for excellence has never been betrayed. As for the majority who try to "beat the market", even though they read the *Wall Street Journal* daily, or subscribe to one or more of the "economic services" that, for a consideration, promise to tell them when "to buy low and to sell high", the losses recorded, in the long run, far exceed the gains; their only consolation is the privilege of correspondingly reducing the amount upon which they pay an income tax! Most medical men who have indulged in speculative ventures will aver that though at times they have made money in the stock market they have lost more at other times, and that they would have, on the whole, been far better off if they had relied for the accumulation of a competence upon deposits in a savings bank and the occasional purchase through a reliable banker of high-grade bonds or stocks of strictly investment character only.

The young physician should, in addition to putting money in the bank, insure his life in one of the standard life insurance companies. His first policy may very well be an "endowment" policy, payable in cash to him at the end of 15 or 20 years,

or to his family in case of his prior death. The recurring premiums make saving to meet them compulsory, and the premiums paid are deductible from the income on which taxes are paid. Upon such a policy, after premiums have been paid for a few years, money may be borrowed should borrowing become necessary, owing to some unexpected financial contingency. The proceeds of an endowment policy coming due at the age of 50 or 60, may, if not then needed for other purposes, be utilized to purchase a "straight life" policy, or for investment in high-grade income-yielding securities recommended by a trustworthy banker.

Besides life insurance, the physician should carry insurance against bodily accident, illness, and any other hazard to which his work especially exposes him. By paying a relatively small annual premium, the insured can transfer to a casualty company a risk that it would be rash for him to carry singly.

There may be some who will think that I am here laying too much emphasis upon the economic needs and rewards of the physician's life and that I should rather use what influence I have to lead the young man in medicine to believe that he is ignoble, base, and lacking in ideals if he give any thought at all to "money". "There is", they say, "altogether too much of the commercial spirit in medicine now; it should be frowned upon. Tell the young physician to devote himself unselfishly to the service of others and to the increase of medical knowledge. Do not

poison his mind with the idea that he must make money. He will, without encouragement, think enough of the material rewards of his professional work. Your duty is to spur him to the development of his spiritual life and culture." These are, as a rule, well-meaning people, and I dislike to be misunderstood by them. I agree with them that it is far more important for the young man in medicine to be fair and square with his patients and to advance medicine by his steady, honest work than for him to spend too much thought upon making income exceed expenditure, upon what he or his family is to eat and wear, upon the kind of house he is to live in, upon how he can most advantageously invest his surplus, or upon how he can gain command of leisure. But it is quite possible, I believe, for the young doctor adequately to consider the material side of his life without injury to the cultural and spiritual; indeed, without such due consideration, he is too likely to fall into one or another of the economic vices, into indolence or into dilettantism on the productive side, or into avarice or into profusion on the side of consumption.

Industry and frugality are virtues that are important guiding principles in life; they give it steadiness and purpose; they are inconsistent with a life that has neither order nor law; and they provide the sound material basis upon which the finer and more exalted interests and activities of life may find support. That shrewd Scotchman Adam Smith some-

where, speaking of the man who works diligently at his calling, said: "He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it. . . . He intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it. I have never known much good done by those who affected to trade for the public good." Conditions have changed somewhat since *The Wealth of Nations* was written, and we now no longer apply in all their rigour its author's extreme conclusions. But most men of experience and sound judgment will agree that there is much truth in the above statement, and most sensible men will, too, agree with a modern student of human nature and life, when he comments upon the material part of existence: "I maintain that to earn one's living skilfully and well, and to spend or save one's money in the same way, satisfies a fundamental natural instinct which cannot be satisfied otherwise. All the vague talk which one hears about living on a higher plane is to my mind dangerously wrong headed. Nobody can live on the higher plane without living also on the material plane. Nobody can cut himself off from the material plane and swim, as it were, unsupported in a spiritual atmos-

phere. The thing is against Nature, and patently absurd." [2]

In conclusion of this section, then, I would advise the young man in medicine not to underestimate the value of the economic satisfactions of his professional life. To attach an undue importance to them is, of course, an attitude to be deprecated; but they are worthwhile in themselves, and, in addition, are worth much more because of the assurance of security and the removal of friction from the medical man's life that are conditions without which the higher satisfactions, those of the best interests of the mind and the soul, are difficult of realization. Let no young man in medicine scorn the experience of mankind through the centuries; rather let him profit by it for the sake of any high ideals that he may cherish for the newer period. And if at any time he be in doubt as to matters dealt with in this chapter and feel the need of further counsel, I would advise him to turn to Dame Prudence, in Chaucer's *The Tale of Melibeus.*

(3) Social Satisfactions of the Medical Career

Man is a social animal, and in appraising the attractiveness of a profession, or, indeed, of any human occupation, due regard should be paid to its possibilities for yielding satisfaction to the wants that are felt through the activity of the "social

[2] *Cf.* Arnold Bennett, *How to Make the Best of Life,* N. Y., Doran, 1923, p. 91.

instinct", or, as it is sometimes called, the "instinct for gregariousness". Let us examine some of the ways in which a career in medicine may contribute to the fulfillment of a man's desires for the avoidance of solitude, for living, enjoying, and co-operating with others; in other words, in what manner medicine may help to give a young man opportunities for sociability, for participation in and the promotion of collective thought, collective feeling and collective striving.

No man, neither cultured nor barbarian, can live unto himself alone; he must live with, and, to some extent at least, for others. Even the veriest hermit is spontaneously a member of certain social aggregates (familial, national, racial), no matter how strenuously he avoid voluntary associations (conjugal, occupational, political, religious). Fortunately, normal men do not wish to be hermits; they feel the need of companionship; they willingly join various human groups (social aggregates) that, combined with property, form social organs, institutions that are especially fitted for the performance of social tasks. The impulse to act with and for others and thus to satisfy some of the fundamental personal needs animates medical men, as much as any other group in society.

The totality of social functions can be divided into three great groups of activities: (1) those of a sustaining system, which includes propagation, settlement, defense against nature (animate or inani-

mate) and the production of wealth; (2) those of a transporting system, which includes transportation and exchange and the apportionment of wealth; and (3) those of a regulating system, which includes discovery, invention, technical application, education, discipline, and control.[3] It is obviously within the first and third of these divisions that the special social tasks of medicine fall, for the practice of medicine is but a part of the social machinery of shelter and defense against animate and inanimate nature, and the teaching of medicine and medical research are important subdivisions of the great regulating systems of society. But besides opportunities for participation in these special social tasks that are peculiar to the medical profession, it is the privilege of the physician to find valuable satisfactions in numerous other social groups—familial, intellectual, recreational, ethical, and political. Indeed, the medical career affords, it seems to me, unexcelled opportunities for fitness and variety of social living.[4]

Doctor and Patients.—A large degree of the physician's social satisfaction originates in the relationships with his clientele. He, of necessity, comes into close contact with his patients, with members of their families, and with certain of their friends; indeed, the physical and psychical relations of doc-

[3] *Cf.* Small & Vincent, *Introduction to the Study of Society,* p. 240.

[4] *Cf. The Wider Influence of the Physician;* an address before the Southern Medical Association, *South. Med. Journal,* Birmingham, 1919, xii, 719-735.

tor and patient are among the most intimate of life. From the physician, the patient has, or should have, no secrets; to him must be entrusted a knowledge of facts and feelings that is sometimes withheld even from members of the patient's family, or from his bosom friends. The confidence exhibited in and the affection felt for the true physician by his patients are to be valued among his most cherished possessions.

Especially fruitful in this connection is the life of the general or family practitioner of medicine, to whom in greater degree than to the consultant, or to the specialist, is given the opportunity to forge strong links of friendly attachment with his following. The good general practitioner, to quote Dr. Osler, "may be a daily benediction in the community—a strong, sensible, whole-souled man, living a life often of great self-denial, always of tender sympathy, worried neither by the vagaries of the well nor by the testy waywardness of the sick, and to him, if to any, may come (even when he knows it not) the true spiritual blessing—that 'blessing which maketh rich and addeth no sorrow'."

The practitioner of medicine must learn to understand not only the bodies of his patients but their minds also—their thoughts, their desires, their pleasures, their purposes, their disappointments—the springs of their behaviour. Such understanding is necessary, both for accurate diagnosis and for successful treatment. No calling makes greater

demands upon the faculty of imagination than that of the practising physician. To comprehend fully the needs of a patient and to be able to persuade him to do what is best in a given situation, the physician must be able to put himself, by a creative act of his fancy, completely in the patient's place. And as he practises this virtue he grows in wisdom, and in knowledge of mankind and of the world; and he gradually acquires skill and diplomacy in dealing with people—in the power to influence and to control them. Learning early the futility of moral condemnation, in his intercourse with his patients he refrains from it; he helps them rather by sympathetic understanding of their inherited and acquired tendencies, by pointing these out to them, and by patiently educating them in the methods through which they can best be modified to their benefit. Adverse judgment of others only does harm. As a sagacious contemporary has said: "The habit of judging, and especially of judging adversely, is at once the most popular and the most ridiculous of all human habits. It is more popular than alcohol, more ridiculous than vanity, and probably more poisonous than any drug yet invented." One of the greatest personal rewards that a physician gains through his training and his experience is the learning of this lesson. It makes him modest, charitable, and more truly helpful, not only in his professional work, but also in all his other relationships.

Medical Associations.—In his every-day work,

whether it be that of a practitioner, a teacher, or an original investigator, the physician may enjoy many satisfactions incident to collaboration with his professional colleagues. In medical practice, the reciprocal relations of seniors and juniors, and of consultants and general practitioners, afford manifold opportunities for the formation of warm friendships and for the cultivation of mutual respect and esteem. In medical education, the ties that connect the members of a school-faculty with one another are often very close, as are also those that unite men of certain ideals with others who cherish the same or similar ideals in other communities. In medical research, too, a sort of free-masonry develops, characterized by an instinctive sympathy, which makes the original inquirer of one region a welcome and honored guest or correspondent of investigators in the same or allied domains in every part of the world.

But in addition to these informal medical groups, the medical profession has instituted a large number of organized societies that bind their members together for specific purposes. Most important of these is the group of societies that are intended to draw all medical graduates within their fold with the aim of bettering the conditions of the members of the profession individually and collectively, and through them the health and welfare of the general public. I refer to the local, the state, the regional, the national and the international medical societies

and congresses. At the meetings of these societies, medical papers are read and discussed, and educational, ethical and legal matters are considered. Every young medical man should identify himself, immediately after graduation, with these organized efforts of his profession; he should join the town or county medical society, the state society, and the American Medical Association, and should be, as far as is possible for him, a regular attendant of the meetings that are held. For these associations help both younger and older men to keep pace with the progress of medicine; and they do much to promote the advance of medical knowledge and to disseminate widely its acquisitions to the public good. The scientific benefits derivable from these gatherings dare not be underestimated, but, in addition, the social relations that are established through attendance are of incalculable value for the solidarity of the profession. Without the corrective tendency of the medical society, a practitioner, or a medical educator, is liable to the faults that too often blemish the isolated worker—the faults of dogmatism, of self-conceit, of intolerance, and of lack of public spirit. Sir William Osler, that great friend of medical societies, deplored the weaknesses that develop in the profession when the value of professional organization is under-appreciated; cliques and coteries attempt to advance their own interests at the expense of those of a wider and more public character; jealousies and misunderstandings arise as

a result of a baneful individualism, and exert "a centrifugalizing influence against which the society is and has been the only enduring protest." And as he further said: "A man misses a good part of his education who does not get knocked about a bit by his colleagues in discussions and criticisms." One of the early signs of intellectual stagnation in a physician is the yielding to a tendency to neglect attendance upon medical meetings.

Collective Educative Efforts to Prevent Disease.—Characteristic of our time has been the formation of large groups in which laymen combine with members of the medical profession in the education of the larger public regarding the importance of health preservation and of disease prevention in special directions. Such organizations as the American Association for the Prevention of Tuberculosis, the American Society for the Control of Cancer, the Association for the Prevention of Infant Mortality, the American Society for Social Hygiene, the Eugenics Association, and the National Committee for Mental Hygiene—many more might be mentioned—have done and are doing a vast amount of valuable educative work in the special fields that they represent. It is the privilege of medical men to join forces with these preventive agencies. There is no small satisfaction to be derived from participation with those of one's fellow men who are animated by the noble impulse to acquaint the masses with the sanitary and prophylactic measures that

have been made available through the growth of modern science and technology.

Medical men of sound common sense are really needed as members of those mixed associations, referred to above, not only for their advocacy of genuine constructive measures but also to oppose and to counteract the foolish fancies of the faddist and the absurd campaigns that favor legal prohibitions that are not justified by the existing state of either science or morality. The ambitious social reformer of small intellectual calibre is always with us, striving to enforce upon the public enslaving rules and regulations that are both repugnant to the spirit of liberty and deadening to any higher moral responsibility. Medical men, in general, are more likely "to keep their feet upon the ground"; they will trust more to education than to legislation; and in the promotion of reforms they will prefer the processes of gradual evolution to those of violent revolution.

In joining in the work of the associations referred to, the young man should, however, avoid too much scattering of his energies. Most men who fail, do so because of insufficient concentration upon the main business of their lives. No man should permit himself to be lead into too many by-paths; rather he should firmly determine to follow a straight path to his goal, avoiding unnecessary distractions, no matter how tempting or how apparently worthy they may seem.

Medical Associations that Give Recognition to the Attainment of Special Proficiency.—Somewhat different from the societies that admit any physician of good standing in the profession to their ranks, are the carefully guarded associations in which membership depends upon a record of some unusual degree of professional accomplishment. Membership in one of these associations may be regarded as a reward, given as a symbol of superior attainment in some special branch of medical work. Young and ambitious physicians and surgeons should be desirous of doing good work for its own sake, but it cannot be denied that they also look forward with pleasure to professional recognition of good work done. There are few so olympic as not to prize membership in the Association of American Physicians, the American College of Surgeons, the American College of Physicians, or any limited medical organization composed not of those who apply but of those who are selected for it because they have climbed to an eminence in their subject that convinces those who are capable of judging that they merit it. When such associations of limited membership are fairly conducted, they can be of distinct service in maintaining high standards of work and of behavior in the profession, and in promoting the cordiality of relationship among groups of the élite. Those who are selected for membership should, accordingly, share in the feeling of responsibility for the realization of the true aims of the association and for the prevention of any sullying of its prestige through

subornation or subreption. For the satisfaction of the selected can be enhanced by paying due attention to the canons that determine further selections.

Extraprofessional Associations.—Among the personal satisfactions of the medical career may be counted also its facilitation of a variety of social activities of ordinary (extraprofessional) life. I refer to the favorable circumstances in which physicians are placed with regard to marital, familial, recreational and political relationships.

A life of permanent bachelorhood cannot be regarded as a full or complete life. A physician, if he be healthy, should, as should all healthy men, marry and have children. In the matter of conjugal and familial relationships, the medical man possesses, undoubtedly, certain peculiar advantages, though it must be admitted that he is also beset, through his occupation, by certain impediments both to marriage and to family enjoyments.

The social status of the modern educated physician is such that he is looked upon as maritally eligible in all cultivated circles; indeed, there are but few parents, now-a-days, who would not welcome a marriage for their daughter with a healthy and high-minded physician should she chance to fall in love with one. Even in England, where formerly the social standing of the physician left much to be desired, conditions have changed in recent times to the greater social appreciation of both physicians and surgeons. When the surgeon was only a

glorified barber, and the physician was the product wholly of an apprenticeship system, it is not surprising that their occupations should have been socially less esteemed than in our time when the requirements of admission to the medical profession are such that its members must possess capable brains and must pass through a long and expensive process of education that ensures more than average culture.

In the search for and choice of a mate (or in deciding that some fair one is suitable for him when he has recognized by subtle signs either that she has selected him or that she would not be wholly unwilling to be selected), the physician should be helped by his biological training and his medical experience to a wise determination. He will have had manifold opportunity of observing, in patients, the baneful effects of bad heredity and the disastrous consequences of pernicious environment. He will have observed that marriages are most frequently the result of fortuitous circumstances rather than of love controlled by reason, and that, furthermore, not all marriages result happily. Even among his fellow physicians he will have known, perhaps, of more than one instance in which either divorce or death seemed preferable to the continuance of a spoiled and discordant married life. He will know, too, that, when actually in love, both men and women are subject to at least temporary illusions that are prejudicial to sound judgment, and that

the time for the effectual application of reason to a love affair is at its inception—later being often too late. Not that marriage should be planned like an experiment in the laboratory, however; marriage without love is one of the worst of disasters. And when love and logic are driven tandem, it is best to put love in front. But when the fancy is stirred, reason and deliberate judgment should be called in consultation at once; if they are in agreement with fancy, the young man may safely "let Nature take her course"; if they are in decided disagreement, he will do well to avoid further exposure in that direction to romantic risk.

Among the questions the young physician should ask himself, when thinking of marriage, are: (1) Am I in the material and professional position that justifies an offer of marriage? (2) Is there anything in the heredity or in the personal history of either myself or the girl that should veto marriage? (3) Would such a marriage favor our individual interests and be conducive to the happiness of us both, or are there incompatibilities of taste or inequalities in capacity for growth that would render the future ominous?

There is much to be said in favor of early marriage. The instincts for mating and for parenthood are importunate and should not be too long thwarted; the mutual adjustments that are necessary in every marriage are more easily made in youth before habits are too rigidly set; and children

during their development are better off when the parents are still relatively youthful. But the medical career, unfortunately, is, in most instances, necessarily deterrent of early marriage. For the duration and expense of a medical education and the exigencies of the early years after graduation make marriage before thirty or thirty-five impracticable for a large proportion of medical men because of insufficient income. This is true even of the medical practitioner, but it is especially true of the young man who is ambitious for a career in medical teaching or in medical research. Dr. Osler often warned the young men about him of the importance of waiting for an assured position and an adequate material basis before thinking of marriage. "Better keep your cerebellum on ice!" was an aphorism in which he jocularly expressed this view.

Though there are exceptional instances that prove the rule, I must in general give support to Dr. Osler's maxim, for I have seen much distress, both material and mental, result from the marriages of medical men that were entered upon unjustifiably early. When the budget of the married couple, because of small or precarious income, must be so pruned that it cannot meet biological needs and so necessitates the bearing of real hardship, the happiness of wedlock is seriously endangered, and a man is neither decent nor wise who will knowingly and willingly subject a woman to this danger, even though she be willing to face it.

And even when a young medical man is in possession of an income that justifies marriage, and would like to marry, he should first take into account his ambitions and ask himself whether the happiness of the marriage he contemplates is compatible with those ambitions. Only too often have I seen the life of a woman saddened and embittered because she had married in his youth an ambitious student who later attained to an eminence in the profession that offered social opportunities of which she could not avail herself, because, owing to natural or nurtural defects, she had not been able to rise with him. Moreover, no small part of a woman's suffering may sometimes consist in the consciousness that she has marred the career of an ambitious husband, to whom, instead of being a help, she has, unintentionally, been a hindrance. The young doctor should make very sure, therefore, that he is ready for love before he allows himself to drift too far into it. He may thus save not only himself but, what should be fully as important to him, some woman also from one of the most tragic of life's pitfalls.

Marriage and the rearing of a family are experiences that every normal man desires for their own sake, but for the medical man they are also experiences that should increase his professional efficiency. For marital and familial problems are often factors in the disturbed psyche of patients, factors that can be much more quickly recognized and understood by

a married physician than by a bachelor. In the adjustment of the marital and the familial difficulties of his patients the wise physician can often be most helpful. He knows that in marriage one must pay attention not only to so-called "essentials," but also to "trifles" and "externals." Many a divorce has been avoided through the happy intermediation of a family doctor; now and then, through the same agent, a divorce may be encouraged when it is found to be a lesser evil than the continuance of the married state.

An intelligent physician soon learns that in married life there are three rules that are conducive to happiness. The first rule for the married is: "Give rather than demand." The second rule is: "Be as polite to your married partner as you are to any other person." And the third is: "Do not try to improve your partner in marriage or to impose your will upon that partner; improve yourself instead." Though these may be counsels of perfection, they serve well if kept in mind. Extreme intimacy certainly makes extraordinary demands upon the best of qualities. If affection and esteem are to continue to be mutual, each of the intimates must unwearyingly cultivate them; and each must see to it that the individuality of the other suffers no starvation; each must learn how to please and how to be pleased.

One of the personal satisfactions of the medical life lies in the advantages it gives in the care and upbringing of children. The physician's knowledge

of child-hygiene brings great comfort to his wife, for a mother may often be in doubt with regard to matters of diet, clothing, fresh air, exercise, bathing, indulgence, discipline, habit-training, protection from contagious diseases, or the management of minor ailments. Should serious disease develop, or surgical aid be required, the doctor can always command promptly the most expert professional or institutional help available in the community for any member of his family. His experience, too, in education and in social life should be helpful to his children in the choice of schools and of companions. In general, there would seem to be no reason, therefore, why the children of physicians should not get their start in life in an environment that is much better than the average.

In his recreational activities, a doctor can always find congenial companions who will contribute further to his social satisfaction. The tension of the medical life demands more than ordinary attention to the needs for relaxation, if the body and mind of the physician or surgeon are to maintain their fairness. Many doctors, unfortunately, are guilty of the sin of neglect as regards recreation,—sin that sooner or later exacts its penalties through exhaustion of the nervous system, increase of blood pressure, or in other ways. The young physician should arrange from the beginning of his career not only for regular exercise daily, but for play of some sort, say tennis, golf, or bridge, with companions

every week, and for a complete holiday away from home and work, preferably in the hills or on the water, once or twice each year. And he should see to it that his æsthetic sense is not starved through lack of opportunity to enjoy the beautiful in music, in drama, in literature, and in the pictorial arts. Particularly lucky is the doctor who can ride a hobby, and ride it hard. It matters little what it is —study of the classics, book-collecting, dog-breeding, or even prize-fighting—provided he can at times throw his soul into it. Medicine is a jealous mistress, too often tending to absorb the whole of a man without leaving any of his spirit free for an avocation; but that medical man who at intervals yields to certain distractions in the company of others will in the long run serve his mistress more faithfully and advantageously than he who denies himself all escape from her lures.

It will be obvious from what I have already said that to the satisfaction of the desire for sociability there are many opportunities open to the young man in medicine. But before leaving this phase of the subject, a few words must be said regarding still another opportunity of this sort, namely membership in groups whose function it is to further public welfare through political or through philanthropic activities. In every community there is need that the persons that compose it unite in various organizations for social betterment, for making general conditions approach more closely to our ideals of

what they should be. Each physician should decide to which, and to how many, of these he will give adherence. One medical man may be best suited to become a pillar in a church; another may find a field for work in a neighborhood association, in a society for the improvement of the conditions of the poor, or in an association for prison reform.

Repudiation or neglect of community interests is unbecoming in any man; in an educated physician it is inexcusable. The young physician, besides doing the best professional work of which he is capable, should early look about him with the determination to engage willingly in at least certain of these ameliorative activities that are tasks of the people in common. A community improves but slowly at best, but improvement lags appallingly, or retrogression may set in, if its more intelligent and honest members neglect their public duties. The educated physician, through his acquaintance with the processes of evolution, his knowledge of the fundamental good in human nature, and his observation of the corrective influence of well-planned and steadily maintained collective effort would seem particularly fitted to share unselfishly, and modestly, diligently and confidently, in the work of solving public problems. And yet there are some physicians who fail in the performance of their duties in this regard. Properly understood and exercised these duties become privileges; in their performance one adds to the enduring satisfactions of his life.

Though a busy medical man may not have a great deal of time to devote to political activity, still he should never be so busy in practice, in teaching, or in research as to neglect all interest in local and national governmental policies. It is his duty, especially in a democracy, to acquaint himself with the programs of political parties and to support by his vote and influence those that are in accord with his convictions of what is best for the public good.

The medical view of society as a living and growing organism that is subject to various maladies should be emphasized. These maladies require accurate diagnosis and skilful and patient treatment by politicians of the highest type, who, like competent physicians treating sick persons, know how to make adjustments that are in accord with the laws of Nature.

In general, medical men are imbued with liberal aims; they are neither over-conservative nor ultra-radical. They know that progress depends mainly upon the character, energy and inventiveness of the persons in a commonwealth, and they, therefore, favor the progressive freeing of all human personalities from the shackles that prevent the full development of their latent powers. Unlike those who are ultra-conservative, they will not hesitate to attempt gradually to modify existing rights and privileges when these are obviously suppressive of freedom of development of human individualities, and,

unlike those who are ultra-radical, they will esteem freedom and diversity of social units as more desirable than equality and uniformity, and will, therefore, be sceptical of the more mechanical schemes of social reconstruction.

This liberal attitude of mind largely determines the desire of our more thoughtful physicians to remedy defects in the existing economic order; it makes them sympathetic with those who make sensible efforts to establish conditions that will permit of a freer exercise of the human faculties for the realization of the self, while at the same time serving society; and it causes them to antagonize all sentimental and unreal projects based upon mistaken theories that, put into practice, would inevitably impose new and dangerous restrictions upon freedom.

The political ideals that physicians cherish should be practical, not in the clouds. The social and material conditions of the masses can be gradually improved, but the improvement can best be brought about by bettering natural capacities through a wise eugenic program on the one hand and through steady progress, step by step, toward environmental conditions that free these capacities from restraint of employment on the other. The political problems that confront us are infinitely complex. They cannot be solved by sweeping formulæ or fluent phrases. They demand for their solution the application of the method of science—definition of difficulties, accu-

mulation of facts, and brooding over the facts to find the best method of procedure.

A successful general practitioner in a country district can often be a great power, if he will, for public righteousness, for his opinion on all subjects is likely to be highly esteemed. And even in urban communities, medical men have political opportunities and responsibilities, which if conscientiously entered upon and performed, are capable of yielding no small degree of satisfaction to their social instincts. It is through politics that society strives to gain rational control of its activities and to direct them toward definite goals. Physicians should be glad to play their proper part in the function of the social organism, for in doing so they also satisfy one of their own fundamental needs.

(4) Intellectual Satisfactions of the Medical Life

The opportunities afforded by a medical career for the satisfaction of a man's desire for the activity of the intellect are practically unbounded. Whether the career be mainly one of medical practice, of medical teaching, or of original medical investigation, the physician must, by compulsion, be ever engaged in the exercise of his mental powers, accumulating knowledge and diffusing it, for he is always attempting through thinking to make his conceptions and those of the people he influences "ever-closer approximations to unattainable reality."

The instinct of curiosity through which man feels wonder when he meets with anything that is strange to him, and has the impulse to approach it, and to examine it more carefully, and to think about it, is one of those fundamental innate propensities of human nature that impel us to our activities. Without adequate provision for the satisfaction of all our instincts, human life is dwarfed and stunted; the human being feels that he is balked and baffled, that life for him has been frustrated. No small factor in the origin of social unrest lies, we are forced to believe, in the inhibitions that conditions as they exist impose upon the freedom of individuals to lead an all-round harmonious life in which there is balanced exercise of all the natural inclinations. We have seen that the medical man is fortunate in so far as the gratification of his instinct of self-preservation and of his instinct for companionship is concerned. It requires only brief consideration to show that his vocation is well suited for giving free course also to his inborn tendency to intellectual activity.

For, in preparing for entrance upon his medical work, the young man is forced to explore both the field of non-human Nature and that of Man himself. He has to become acquainted with the properties of matter and energy and to learn how to measure heat, light, sound, electricity, and magnetism in terms of standard units. He has to study the composition of substances, the elements of which substances are constituted, and the changes in com-

position that substances undergo under varying conditions. He has to examine a number of animals and plants, to find out how they are constructed, to observe how they come into being, how they live and how they die, and so become acquainted with the laws of life and death, with the influence of heredity and environment upon animal and vegetable development, and with the processes of evolution and of retrogression. He has to study the phenomena of the normal human mind, its processes of knowing, of feeling and of striving, and the relations of these to one another; he does this by looking into his own consciousness and by observing the behavior of his fellows. And he comes to learn, too, something of the ways in which people live together in groups and of the effects of such association upon human thought, feeling, and conduct. Surely, such preliminary work alone, undertaken before the young man enters upon his medical studies proper, must go far toward the stimulation and the satisfaction of his desire for mental activity, toward both whetting and appeasing his appetite for knowledge.

Add to these studies preliminary to the medical course those of the curriculum of the medical school —anatomy, physiology, pathology, bacteriology, medicine, surgery, obstetrics, and their branches— and one sees the wide scope for intellectual activity before graduation.

And after graduation, the medical practitioner finds in every patient a special problem in diagnosis

and therapy that his intellect must try to solve; and the medical teacher and original investigator in medicine lead lives of mental work that require intensive application of both the logical and the imaginative powers.

In no occupation in life is a knowledge and training in the method of science more necessary than in medicine. And the medical man both before and after graduation is constantly making use of this method. He sees a problem and experiences a feeling of difficulty; he collects data that more clearly locate and define his problem, he arranges the data in various ways, summarizes them, and broods over the facts accumulated in order that through his imagination ideas of solution of the problem may occur to him; a plausible suggestion of solution is reasoned out as to its detailed bearings; a comparison of these implications with the facts that have been collected, and with the facts as extended by further observation or experiment, permits him to test the validity of his suggestion of solution. Should identity be found to exist between the facts actually found and the consequences of the imagined explanation, he concludes that his idea is valid; otherwise, that it is refuted and that other explanatory suggestions must be sought and tested for validity before the problem can be solved. So-called "intuitions" are helpful, for they are often the starting-point of great achievements; but, in medicine, our intuitions should always be rigidly subjected to control by rea-

son. The method of science, or in other words, the method of deliberative thinking, as briefly outlined above, is the sole method of arriving at truth.[5]

In medicine, there is always "knowledge in the making", or, as Charles Singer has described it, "the growing edge between the unknown and the known"; medical knowledge and the medical art are constantly being enriched through the art of discovery. And the artist in discovery has this advantage, that though he often fails to find what he has started out for, if he work conscientiously he is sure to find something else that is of importance. There is much truth in the adage that "it is not the attainment of the goal that matters; it is the things that are met with by the way." For the most fruitful work in discovery, a rare combination of mental qualities is essential; great power of imagination must be united with a strong feeling and will for accuracy. The imagination cannot be too daring or adventuresome in breaking with tradition or prejudice; but its owner must also possess infinite patience, a critical sense, and the capacity for painstaking, exact observation and precisely planned experiment, if he is to be a successful medical investigator. Much joy and satisfaction are reserved for the discoverer of new medical facts, and still more for him who knows how to correlate facts and to epitomize them in the brief formulæ that we know as "laws of nature". What can be more gratifying to one with

[5] *Cf.* Dewey, J., *How We Think,* New York, 1910.

a thirst for knowledge than the wresting of a secret from nature or the forging of a new instrument of power that can be used to help mankind?

Further, special opportunity for intellectual satisfaction in our profession is to be found in medical writing. Though it is not given to all physicians to write easily or well, the art of writing is worth cultivating, for most members of the profession who attain to eminence are compelled to be writers as well as observers or experimenters. Clinical observations and laboratory experiments must be reported if new knowledge is to be quickly diffused; moreover, new systems and text-books in every branch of medicine, which bring the accumulated experience of the past, increased and modified by the latest discoveries, into convenient form for study, are needed by each successive generation. When the papers published and the books printed are well written, they perform this function much better than when the writing is slovenly, monotonous or savourless. Though medical writing is best, on the whole, when, as in the papers of the Royal Society, "all amplifications, digressions and swellings of style" are rejected, still we admire and enjoy most the writings of those who travel a fine "personal road of style". Personality appears, willy-nilly, in a man's writing; he may think that he is describing nature purely objectively, but he gives, albeit involuntarily, some account of himself at the same time; for in the art of writing, as in all other arts, "man

is added to nature". The pleasure of reading Osler's *Aequanamitas* and other addresses, or Trousseau's *Clinical Medicine,* or Claude Bernard's *Leçons de physiologie expérimentale* is not confined to appreciation of the medical information contained in them; it is greatly enhanced by the revelatory glimpses of the personalities of the writers that one gains during their perusal. Each writer tells us what he believes to be the truth, but it is always the truth as seen through his own temperament. And the "grace" of the facts is increased when seasoned with the "salt" of a rich and pleasing personality. The product of the mediocre writer is devoid of that radiance which through the personality of genius is spontaneously diffused.[6]

In his premedical studies, in his work in the medical school and hospital, and in his everyday activities in after life, the physician has, then, a truly wonderful field for the exercise of his powers of thinking, of imagining, and of reasoning. In searching for truth and in promulgating it, in observing with accuracy, in experimenting according to precise plans, in reading widely and judiciously, and in writing clearly, forcibly and flexibly, these powers may function in a variety of forms. The use of his intellectual faculties is capable, therefore, of contributing handsomely to the higher and more enduring satisfactions of his vocation.

[6] *Cf.* Havelock Ellis, "The Art of Writing", in his *Dance of Life,* Boston and New York, 1923.

(5) Æsthetic Satisfactions of the Medical Career

Another fundamental human need is connected with the activity of the æsthetic judgment. Man has a desire for the beautiful. He loves to create beautiful things himself, and he derives satisfaction, also, through the enjoyment of beauty in nature and in man, beauty in his own works, or beauty in the works of others. Let us see, then, in how far the medical profession makes provision for those creative and contemplative impulses for which the æsthetic instinct may be held responsible.

Art is human skill as opposed to non-human nature. An artist is one who makes "fit" things; the "fitter" the thing that he makes, the better the artist. And "fitness" is harmony, or the apt arrangement of parts, something that when contemplated seems to us agreeable because it appeals to our sense of beauty. In its humbler forms, this appreciation of beauty is related to the most primitive manifestations of human life, to the very simplest of arts and crafts; indeed, to every mode of expenditure of human energy. There is enjoyment to be gained from the scrubbing of a floor, or from the painting of a door, if the act be performed skilfully and if the actor be endowed by nature with any power of æsthetic appreciation. William Morris did much to emphasize this relationship of craftsmanship to the æsthetic sense, as the novelist,

Charles Marriott, and the philosophers—de Gaultier in France, Santayana in America, and Croce in Italy—have more recently done. These authors have rendered society a great service by pointing out that the enjoyment of beauty in its humblest forms and its appreciation in the fine arts differ only in degree; for the same emotional apparatus is involved in the appreciation of the fitness of menial activities, of clothes, of speech, of manners, or of government as in that of the beauty of a discovery by Pasteur, a play by Shakespeare, a painting by Velasquez, or a symphony by Beethoven. There would seem to be much to be hoped for human welfare and happiness from programs that have as their object the increase of the æsthetic endowment in the masses through eugenics and its development in them by education and by gradual improvement of the conditions of industry.

The physician may make his own activities things of beauty, if he be obedient to the impulses within him that guide him toward the best work of which he is capable. But this is by no means easy, as all physicians with strong artistic tendencies will be among the first to admit. Those who have struggled to make the work of their lives harmonious and fit will agree with Havelock Ellis when he says: "The path of beauty is not soft and smooth, but full of harshness and asperity. It is a rose that grows only on a bush covered with thorns. As of goodness and truth, men talk too lightly of Beauty. Only

to the bravest and skilfullest is it given to break through the briers of her palace and kiss at last her enchanted lips."

The young man in medicine in his student days can scarcely fail to do better work, if in that work he strive not merely to acquire knowledge but also to satisfy his æsthetic sense. As a teacher in the medical school I soon learned to look with favour upon the student who in the anatomical laboratory made a "beautiful" dissection, or who, in the pathological institute, stained his sections of tissue so perfectly that they delighted me, or who, in the clinic, made physical examinations so skilfully and kept records with such order and accuracy that they charmed the observer. There are exceptions, of course, but, in general, it will be found to be true that the pupil who works in the spirit of the true artist, who knows how to delight in the work that he does for its own sake, who, besides being interested in content, loves perfection of form, is likely to go far. But even though he go not far, he has experienced on his way satisfactions of his need of beauty that are not to be despised.

And the same considerations apply to the work of the medical man after graduation from the medical school. The art of medical practice, the art of medical teaching, the art of medical discovery, and the art of medical writing are likely to be best promoted and to be most greatly enjoyed by those who pursue them in compliance with the urge of their

æsthetic motives. Diagnosis and therapy are arts as well as sciences that should be practised in the artistic spirit. The medical teacher who neglects the beauty of form in his teaching will find it difficult to drive in its content. The investigator who tries to solve medical problems will be most productive when his imagination and his reason work in harmony with his æsthetic judgment. In presenting his results to the world, the investigator is fortunate if in addition to vivid written description, his article contains good illustrations made by someone who has facility with pencil or brush. Some medical men have been their own illustrators, notably the Bells, His, Leidy, and Lister. But most investigators depend upon the aid of others for their illustrations. We owe in this country a debt of gratitude to Max Broedel for the school that he has established for the development of medical illustrators. And, other things being equal, that medical writer will reach and influence most readers, who reports the truth as he sees it through his own temperament and who remains loyal to the æsthetic creative impulses that well up from the depths of his soul.

Not a few medical men have turned their creative instincts to the production of works of beauty outside the domain of medicine proper. The distinguished French neurologist Charcot was a clever artist with pen and pencil. The British surgeon Sir Seymour Hayden is numbered among the best of modern etchers. In artistic literature, Sir Thomas

Browne's *Religio Medici* is an instance of unmatched splendour of style. Albrecht von Haller was a poet as well as a master of physiology and of medical history; and one of the great English geniuses in poetry, John Keats, was a surgeon's apprentice. It was the latter who emphasized the necessity of study for the perfection of the poetic art, "not merely the technical study of artistic models, but of life and its problems, and of human character in which the problems are illustrated." Among modern essayists and novelists there have been notable medical names; from a long list, those of Oliver Wendell Holmes and Silas Weir Mitchell may be cited as American examples.

So much for the medical man as active artist, and the possibilities of the guidance of his creative impulses by his sense of beauty; let us turn our attention next to his more passive æsthetic impulses, those that are concerned with the calm and joyous contemplation of what is beautiful, and see in how far the medical career gives opportunities for their satisfaction.

As a student of Nature and of Man by the method of science, the physician has been, and continues to be, compelled to come into close contact with the objects of his study; his very studies thus give him plenty of occasion to observe and to appreciate both natural and human beauty. And the more one knows of Nature and of Man, the more of beauty he discovers in both. Not many may reach the

height of contemplative enjoyment attained by Spinoza, for whom reality and perfection were identical, but most of those who study any subject deeply learn to appreciate the truth of that fine saying of Leonardo: "True and great love springs out of great knowledge, and where you know little you can love little or not at all." Now the person or the thing that you love is, to you, beautiful. There may be beauty to be discovered even in ugliness, if you but learn how æsthetically to envisage it, as did Dante in the *Inferno* and Dostoievsky in his novels. It is conceivable that even the evil in the universe might seem beautiful to a God who could create it; at any rate such a theodicy would seem to me more plausible than some of the theodicies that have attained to vogue. Who can see the full beauty in the material things of nature who has not gained the special insight of the chemist? Or, who can enjoy the beauty and power of natural forces to the extent that can the physicist who has thoroughly investigated them? Or, who has felt more the poetry in living things than the biologist Huxley, or Agassiz, or Fabre, or even Darwin, who by inheritance and training was shut out of many other æsthetic enjoyments? Nor is it to be supposed that it is given to many untrained in psychology to see the beauty in human thinking, feeling, and striving that opened out before the intense gaze of a William James or a Wilhelm Wundt. Nor can one imagine that one who has not studied sociology can under-

stand what is to be felt on contemplating the mind of the man, the feelings of the crowd, or the collective will, as could Comte, Spencer, or Schäffle. Some knowledge and some training the medical student of to-day has had in all of these branches of science so that he should be better able than those without such knowledge and training to enjoy by contemplation the beauty of the things with which they deal.

But it is in his studies of health and disease that the physician attains to his highest knowledge; it is not strange, therefore, that much of his æsthetic satisfaction should be derived from his ideals of health and strength for the individual and the race and from his conceptions of the succession of links in the various chains of pathogenesis that manacle the organism in disease. Not only in the beauty of the finest products of eugenics and euthenics does the æsthetically endowed physician feel joy; in the contemplation of the inner truth of the ugliness of deformity and of the hidden meaning of the symptoms of disease he may also find delight. For even physical or moral ugliness when interpreted by clear and penetrating minds may become themes of the most astounding beauty.[7]

Thus, Velasquez converted the ugliness of Sebastian, the dwarf fool of Philip IV, into a compellingly

[7] *Cf.* Rodin, A., *Art.* Translated from the French of Paul Gsell by Mrs. Romilly Fedden, Boston, Small, Maynard & Co., 1912.

beautiful symbol of the martyrdom of conscience; Shakespeare in his portrait of Iago and of Richard III knew how to fashion beauty from outstanding examples of evil human natures; and the modern sculptor, Rodin, in shaping an old courtesan upon the text of Villon's poem, *La belle Heaulmière,* has given us something horribly ugly to look at, but, at the same time, a figure from which so great a sorrow breathes that our æsthetic appreciation is coerced. Who other than the able and experienced physician with his seeing eye and his tender heart is better outfitted to appreciate either intellectually or æsthetically the deeper meaning of the bodies and minds of the human beings that he meets? Or, who is more likely than he should be to discover and enjoy the beauty in the fine productions that the minds and imaginations of great artists have yielded?

Physicians doubtless vary in their natural capacities for the creation and appreciation of beauty; but it would seem to be the fault of education and training if the capacities they have remain latent or imperfectly developed, for their lives are full of opportunities for the exercise of the æsthetic faculty. Physicians who recognize that the desire for beauty is a fundamental human need, the satisfaction of which is necessary for the individual whose personality is to develop in all-round manner, will do all that they can to promote the production, the interpretation and the enjoyment of beauty in the com-

munities in which they live. They can do most, perhaps, by setting personal examples, striving to exhibit beauty of health and of deportment, choosing when possible beautiful sites for their houses, avoiding architecture that is ugly or pretentious, furnishing and decorating with simple but good taste, and devoting at least a part of their leisure to the enjoyment of beauty in nature, in art collections, in music, in the theatre, in literature, and in society. They can do something, also, by lending their influence to those who are striving to educate the masses to see that "ugliness in man and ugliness in man's surroundings are the root of a large proportion of the evils of man's life to-day," and that a general increase in the love of beauty in life and in its surroundings would go far toward preventing these evils.

Physicians, if they will but take the trouble, can do much among their clienteles to excite an interest in beauty and in the abolition of what is sordid, hideous, squalid, sensational, and gross. Their endeavors to set examples in living in the spirit of the artist, in developing their own personalities in a proportionate way, must always be a comfort and a stimulus to others who try so to ennoble their lives as to make them works of art. Lives so lead may ultimately yield a calm and happy clarity like that of Madame Claire in the distinguished novel of Susan Ertz, or like that of Prospero in the *Tempest,* a goal in life worth striving for!

Most fortunate, then, is the young man who, upon entering medicine, finds that within his bundle of inherited tendencies he has a strong æsthetic instinct and that in his home and in his school surroundings it has suffered no serious repression. And correspondingly wretched are the prospects of the youth who contemplates a medical career when he is deficient in æsthetic endowment. His lower possessive impulses are all too likely to strangle his higher tendencies; and his joys are prone to be reduced in accordance with the deficiency of his powers of appreciating beauty.

(6) Ethical Satisfactions of the Medical Life

Before leaving the attractions of a career in medicine, we must inquire into its possibilities for affording satisfaction to another deep need of human nature, namely *the desire to do right*. This is obviously one of the most important of human dispositions, for it has been largely through the impulse to do right that man, aided by intelligence and by association with his fellows, has been led gradually upward from animal behavior to the higher planes of human conduct.

Just how this desire for righteousness arose in the race and just what is its origin in each individual are problems that have been much discussed. Some postulate a fundamental animal instinct to do right, others look upon the disposition as a derived one, related partly to the social instinct and partly to the

self-preservative instincts. No matter how this may be, the human being who to-day grows up in a civilized society has a desire for decent and decorous behavior, a desire that in situations in which judgment and choice are required before action, the right courses and the right goods will be discovered and followed; that is to say, he has a desire for ethical conduct both in himself and in others. And unless these ethical longings of a person find adequate opportunities for satisfaction in the circumstances of his life, his personality will lack balance. Out of the inherited tendencies that the child brings into the world, through their reactions with influences in the environment, character and personality are fashioned; the "self" being partly inborn, partly a post-natal acquisition, is thus ever changing, ever in the process of rebuilding. Do the conditions of the medical life favor or injure the dispositions in a man's character that make for right behavior and for appreciation of high standards of conduct by himself and by others? It can, I think, be easily shown that they do.

Ethical conduct is only a part of behavior as a whole.[8] Medical students and physicians have not only the layman's general opportunity for the observation of human conduct but, in addition, through their professional studies and activities, they have special opportunity for close observation of the behavior of single persons (both normal and

[8] *Cf.* Spencer, H., *The Data of Ethics,* N. Y., 1893.

pathological), for acquaintance with the consequences of different kinds of behavior, and for the more exact study of the "causes" or "springs" of behavior.

The medical student (like the physician in practice) comes into contact with individual human beings, of all ages (from infancy to old age), of both sexes, of various races, of varying degrees of natural endowment, and of different social and economic classes. In the obstetrical wards and in the pediatric clinics, he observes behavior in infancy, in childhood and in early adolescence; in the outpatient departments and in the various stationary clinics, as well as in private practice, he has wide opportunity for the observation of the behavior of adults. Many of the persons he sees are relatively healthy but many of them are the victims of physical or mental disease of varying degrees of severity, and he soon learns that the behaviour of the human organism in disease may often throw great light upon the behavior of the human organism in health. In the neuropathic wards (and in the psychiatric clinic particularly) he views the peculiar behavior of neurotic and psychotic patients; notes correlations between physical make-ups and mental states on the one hand and modes of behavior on the other. He studies the influence of heredity as well as that of environment in the production of human personalities that are continuously reacting to stimuli that impinge upon them. He gets an insight into the

motives and acts of the bodily feeble, the mentally defective, the emotionally unstable, the melancholic, the manic, the paranoid, and even the criminal. In the writing of clinical histories he learns to describe the ways in which patients have really reacted during their lives; thus he comes gradually to understand these ways and to get glimpses of how they are related to the constitution of germ-plasms, to physical and psychical surroundings, to customs, to beliefs, to laws, to institutions, and to various ideal standards.

The consequences of different kinds of behavior ("good" and "bad") are being constantly focused in the attention of medical workers. Those who have attained to so-called "self-control," who show temperance (or the power to resist desires, the gratification of which would be harmful to them or to others) and who show courage (or the power to resist fear of pain and danger when such resistance is demanded for the attainment of some desirable end), exhibit a very different mode of life from those who have not attained to self-control but remain intemperate and cowardly.[9]

In the domain of the bodily life, it is one of his especial functions to find out what tends to preserve and to increase the health and strength of the body and what tends to impair or to weaken it (especially trauma, intoxications and infections). He quickly

[9] *Cf.* Paulsen, F., *A System of Ethics.* Eng. transl. by F. Thilly, N. Y., 1908.

learns the effects of the ignorant or faulty behavior that is exhibited in insufficient or ill-balanced eating (undernutrition or malnutrition), as well as the effects of gluttony (obesity, high blood pressure, arteriosclerosis and their sequels). He sees also, all too often, the baneful effects of the abuse of alcohol, of tobacco, of coffee and of tea; but he observes, at the same time, that a puritanical asceticism also has its dangers. None is more familiar than he with the ills that follow upon sexual excesses and upon diseases contracted through sexual promiscuity. Who better than he knows how, in such cases, the "innocent" often suffer with the "guilty"? He is cognizant not only of the immediate local effects of gonorrhea and syphilis, but he is aware that they are as nothing compared with the more remote results. He has watched the suffering of gonorrheal arthritis and has made autopsies on those who have died of gonorrheal endocarditis or gonorrheal septicemia. Loathsome as are the secondary lesions of syphilis, the tertiary lesions may be even more destructive; and still worse are the disabilities that accompany locomotor ataxia or the mental aberrations of general paresis. Too often, too, he has seen the disease contracted by the wife of a syphilitic and has watched the development of the malady in innocent young children following upon such conjugal syphilis. He witnesses the beneficial results of systematic development and exercise of all the different bodily powers as well as the bodily and mental mis-

fortunes that come to those who fail to do so. He contrasts human beings whose lives are so ordered as to balance suitable activity with suitable rest and recreation with the lives of those who fail in such harmonious arrangements.

From the standpoint of the economic life he watches the influence upon human behavior of the necessity of acquisition through labor and of various attitudes assumed toward the consumption of commodities. In labor, some are efficient and faithful to their calling; others are idlers who sooner or later find difficulty in their own lives and become a burden to others. From the standpoint of the consumption of commodities he sees those who are frugal or economical on the one hand and those who are greedy and prodigal on the other. He can scarcely fail to observe the disgracefulness of the avarice of some and the dangers of the unwise extravagance of others. The advantages of the possession of moderate means, the pleasures of sensible acquisition and possession, and the favorable effects of efficient labor and of moderation in the use of goods do not escape his notice. He recognizes that to have too much is to run the risk of idleness, of arrogance, of ostentation and of extravagance; and that to have too little may tend to lessen economic honor, or to endanger it, and to make for improvidence and recklessness.

In the domain of spiritual life and culture, he sees the fallacy of attempts at education beyond the reach of limited potentialities, as well as the advan-

tages of the education and the culture that liberate innate capacities and are conducive to the development of tolerance. He becomes familiar with the sins of pride and haughtiness because of the "knowledge that puffeth up" and with the ills of stupidity and ignorance due either to lack of natural capacities or to faulty conversion of potentialities into realities.

In the domain of honor and love of honor, the medical man sees the effects upon the individual of the approval and the disapproval respectively of fellow men and women in business life, in social life and in political life. Those who have proper pride and proper humility seek to gain by means of straightforward and praiseworthy actions the recognition of those whom they regard as the better among their fellows; whereas, those who are vain and overambitious may resort to dubious methods for the sake of gaining temporary admiration or flattery. The high-minded man, though he exhibits true self-esteem, is seen to strive to avoid both pusillanimity and superciliousness.

In the domain of justice, the medical worker observes the effects of behavior that tends to retard the welfare of other persons as well as of that which tends to promote it. The "just man" tries to do no wrong himself and, as far as possible, strives to permit no wrong to be done to others; he respects the right and protects it, but he limits and supplements this duty by the demands of equity and of

magnanimity. Again, on the positive side of benevolence, the physician will note the importance of regard for the complete living of others, in as far as such regard is possible; first, without neglect of one's own personal life or failure in the special duties that arise because of one's own connection with certain individuals or institutions, and secondly, without impairing the independence of those whose claims to completer living are favored. In him there will grow the conviction that, as humanity makes progress, there is an ever-increasing tendency to provide in society the conditions under which its activities can be so carried on that the fullness of life of the single person may not only be consistent with, but also conducive to, the completer living of all. A good medical man is compelled to be the enemy of cruelty in all its forms, of prejudiced enmity, and of ingratitude. He will be an enthusiast for veracity and will disparage all varieties of falsehood and of equivocation, knowing that they destroy the trust and confidence of men for one another and thus are most harmful to social life. Slander, malicious gossip, as well as flattery, and hypocrisy will be anathema to him; he will even be cautious lest legitimate "diplomacy" and "tact" degenerate into inveracity. When sincerity demands it, he will have the courage to speak plainly and truly, even at the risk of being temporarily blamed or misunderstood.

The biological training of the physician as well

as his clinical experience go far, as has been said, toward revealing to him the "springs of human behaviour". From biology he learns that every realized person (phenotype), both in structure and in function, is the resultant of a series of interactions of his inherited potentialities in the germ-plasm (genotypic pattern) with the environment (physical, chemical, psychical), this environment being continuously influential from the time of conception through the prenatal, the infantile, the adolescent, and the adult periods to the end of life. Constitution, temperament, and character (and, accordingly, modes of reaction) are, therefore, partly inborn, partly acquired in the course of life. From the clinic, he learns that ability and imbecility, virtues and vices, like stature and physiognomy, tend to "run in families"; he is not surprised to find "success" prevalent among the descendants of a Johnathan Edwards or "failure" dominant among the descendants of a Kallikak; he sees elation and pressure of activity alternate with depression and slowing of thought and movement among the members of every generation of manic-depressive insanity; he observes that criminals tend to breed children of criminal tendency; and he may even have observed that divorces are common in certain human strains and rare in others. But he knows, too, that inimical environments can affect the character and the behaviour of human beings of good ancestry; undernutrition, infections, intoxications, poverty, igno-

rance, lack of training in habits, lack of inculcation of standards and ideals, excessive physical, mental, and emotional strains, and malign psychical, social, industrial, and political influences of various sorts may prevent the realization of excellent innate potentialities, or may lead to the deterioration of some already realized.

For the physician, then, behavior seems to be determined by heredity and environment and their interaction. Though he recognizes the determining influences of praise and blame, of social approval and social disapproval, he, himself, confronted by conduct (either good or bad) tries to understand and explain individual persons rather than to judge them either favorably or harshly. If he lay his finger on the spot of "unethical" behaviour and say "Thou ailest here and here", he will strive to ascertain the origin of the ailment and will endeavor to prescribe a regimen that will either cure or, at least, ameliorate.

All of these experiences of the physician have their effect upon his attitude toward ethical theory. He is not likely to be too favorably impressed with ethical systems that are based wholly upon loyalty to any single authority, upon pure intuition, or upon the assumption of any "single, fixed and final good". Impressed with the fact that every human being is unique, in certain respects different from every other human being, his slogan will be "personalism" and he will be inclined to distrust "universal" laws

of behavior, applicable at all times and to every person. Just as each person is unique, so each moral situation is unique. The "right action" in each has to be sought among the different modes of response of the organism that would yield the different "goods" that are the ends of conflicting desires. For now, even as when Sophocles wrote the *Antigone,* the tragedies of life lie in the conflicts of different "rights" and "duties".

Trained in the method of science, as the physician is, he feels that in every perplexity the method of science should be applied. When there is a difficult problem to be solved, whether it be one of diagnosis of a disease of the heart, or the selection of the right "good" or the least "wrong" among different "ends" to which conflicting desires prompt action, the technique to be employed will include: analysis of the difficulty, the use of the imagination for suggestions of solution, reasoning out implications of tentative solutions, comparison with the facts of the situation, and final arrival at a conclusion. Thus morals cease to be a set of rules; moral acts become the results of specific judgments arrived at by the method of science in concrete situations that involve conflicting desires; perfection is not attempted but rather growth toward better living.[10]

The medical man is optimistic enough to see much that is good in the world; he is pessimistic enough

[10] *Cf.* Dewey, J., "Reconstruction in Moral Conceptions". In his: *Reconstruction in Philosophy.* N. Y., H. Holt & Co., 1920.

to see much that is bad; but he will be melioristic in that he will believe that many of the conditions in which he finds himself immersed can be made better. Even if he be of sceptical turn and feel that "the world is scarcely respectable", he may with Santayana admit that "it is shot through with beauty, with love, with glints of courage and laughter; and in these the spirit blooms timidly and struggles to the light among the thorns." [11]

In the narrower field of professional ethics proper, the medical man of normal intelligence and trained emotions should have no difficulty whatever in finding his way. Beginning with the "Oath of Hippocrates", dating back over 2000 years, members of the profession have from time to time attempted to formulate codes of "medical ethics." [12] In this country, the "Principles of Medical Ethics" have been codified by the American Medical Association.[13] In this code, the duties of physicians (i) to their patients, (ii) to other physicians and to the profession at large, and (iii) to the public are outlined. This code, though it contains much that is good, could certainly be greatly improved; doubtless, it will from time to time be reformulated when more attention is paid to social and professional

[11] *Cf.* Santayana, G., *Platonism and the Spiritual Life.* N. Y., Scribners, 1927.

[12] *Cf.* Smithies, F., "On the Origin and Development of Ethics in Medicine and the Influence of Ethical Formulæ upon Medical Practice", *Ann. Clin. Med.*, Balt., 1925, iii. 573-603 (with bibliography).

[13] Adopted by the House of Delegates, A.M.A., in 1912.

relations by physicians and as the ethical consciousness of the rank and file of the profession widens. Among the criticisms of the code already registered [14] may be mentioned (1) the disproportionate emphasis laid upon the duties to other physicians in contrast with those to patients and to the public at large; (2) the failure of thorough analysis and definition of professional relations by the profession itself and the relegation of this function so essential to the social order in many instances to the courts of law; (3) the failure adequately to inform the public that the medical profession has provided sanctions for professional behavior; (4) the inability of medical men as yet, to insist upon their professional prerogatives in society; (5) the failure sufficiently to recognize the fact that standards of medical practice dare not be determined solely by rigid codes or professional sanctions, but must take into account also the constantly changing social conditions; and finally, (6) the lack of realization of the danger that the genuinely idealistic members of the profession may be unable adequately to influence those practitioners who are less scrupulous as regards their professional obligations.

It is obvious that the whole subject of "medical ethics" needs thorough ventilation, and it is rather discouraging to those who have the advance of

[14] *Cf.* Taeusch, C. F., "The Ethics of Medical Practice." In his: *Professional and Business Ethics,* New York, H. Holt & Co., 1926.

ethical considerations in the profession at heart to observe the relative sparsity of papers dealing with the subject in a worthy way in our medical journals. It is highly important that a profession that would lay claim to its proper place in the social order should take seriously its responsibility for the adequate regulation of the special social activities that are incident to the performance of professional duties.[15]

The problems of the population drift from rural to urban communities, of increasing professional specialization, of the technique of general practice, of associations for group practice, of the increasing cost of medical services, of practice by "irregulars", of "whole-time" and "part-time" medical teaching, of provision for medical research, of public health activities, of industrial medicine, of health insurance, and of the so-called "socialization of medicine", are all vital and pressing. Old formulæ will not suffice for new situations and new ones must be found that will guarantee suitable measures for disease-prevention and adequate medical care for all at a reasonable cost while at the same time scientific medical investigation is fostered, recruits to the ranks are secured and properly trained, and the best interests of medical practitioners are protected and advanced. In the rearrangements that are becoming imperative, there is obviously opportunity, as I

[15] *Cf.* Honigmann, G., *Das Wesen der Heilkunde,* Leipzig, F. Meiner, 1924.

have elsewhere in this volume emphasized, for the highest type of medical statesmanship; for the public, without the intelligent guidance of the more idealistic medical men themselves, is all too likely to drift into difficult and dangerous paths.

From the foregoing discussion it will be sufficiently clear that ethical problems and ethical considerations are by no means the least important of the matters by which the young man in medicine will, in the coming time, be confronted. He will need to be widely sympathetic, keenly sensitive, persistent in facing difficulties, and capable of thorough analysis and vivid imagination, if he is to be able to make wise decisions and to abide by them tenaciously. Moral failures depend most often upon congenital defects of disposition, upon lack of sympathy, or upon prejudices that lead to perverse judgments in the concrete situations of life. But a profession that has in the past attracted to it the galaxy of brilliant and high-minded men whom medical historians love to honor is not likely to fail in the future to draw unto itself a sufficient number of worthy successors and it is quite possible that the opportunity afforded by medical activities for ethical satisfactions ultimately will be found to be among the more alluring of the personal rewards that offer themselves to those who contemplate a medical career.

APPENDIX

Personal Qualifications Desirable in Those Entering upon a Medical Career—Preliminary Education—Choice of a Medical School—The Work in the Medical School—Medical Licensure—Rural and Urban Distribution of Medical Practitioners—The Cost of Medical Care—Post-Graduate Studies—Helpful Reading.

1. Personal Qualifications.—Certain personal qualities are desirable, in general, in young persons who undertake to prepare themselves for medical work, though the variety of medical occupations give opportunity for a variety of persons of very different physical and mental make-up. The qualities that make for success in original research may differ somewhat from those that are most desirable for medical teaching and, in turn, those that may be best suited for the development of a general or a special medical practitioner may deviate from those qualifying for work in discovery or pedagogy. Into these special and peculiar qualifications for particular kinds of medical work, this is not the place to enter. Here will be mentioned only those qualities that would seem to be most important in general for the medical life.

In the first place, the prospective medical man should be strong, physically. Occasionally, a physical weakling has achieved success in medicine, but, on the whole, medicine is no career for the person who is seriously handicapped physically. It would, for example, be the height of folly for a young man or woman with a serious heart lesion, an active pulmonary tuberculosis, marked impairment of the function of the kidneys, diabetes mellitus, multiple sclerosis, or exophthalmic goitre to enter

upon the study of medicine. Both during student days and afterwards, the work of medicine is arduous and exacting; the demands made upon physical strength and endurance are too great to justify the physically feeble or the easily fatiguable in attempting to meet them.

In the second place, the student ambitious for a medical career should attempt more or less accurately to appraise his intellectual powers before deciding upon his career. Medicine is no suitable occupation for one who is not well above the average in potentialities of intellect. A strong instinct of curiosity that impels to investigation, the ability to observe accurately and to analyze situations into their minutest details, the power of imagination that, brooding over a set of facts, results in the occurrence to the mind of fruitful ideas, the talent that enables one to "think things through"—to see all the bearings and implications of a hypothesis, keenness in recognition of co-existences and regularity of sequences, insight into the significance of causal relationships—all these are essential in the everyday work of the medical student both before and after graduation.

In the third place, certain potentialities of emotion and of will are essential to any higher success in a medical career; a well-balanced emotional life and a resolute will, or at least the capacity to attain to them, are highly important desiderata for those entering upon medical work. Temperament, character, and will-power are no less significant than intelligence for the development of human personalities; the capacity for wonder, a certain serenity and a feeling for orderliness, a liking for one's fellow man and the power of entering into sympathetic relationship with him with a desire to help and to co-operate, a sense for beauty and a dislike of the ugly, a strong desire always to do the right thing, a recognition of a hierarchy of values, the ability quickly to decide

and to adhere to a decision, the love of steady work, the willingness to endure certain hardships for the sake of achievement—these and other qualities of mind and heart that might be mentioned are of advantage for the life devoted to medicine. The neurasthenic, the hypomanic, the melancholic, the hypochondriac, the psychasthenic, the querulous, the apathetic, the asocial, the inartistic, the lazy, the self-indulgent, or the dilettante will find himself greatly handicapped anywhere, but particularly so in medicine!

In the fourth place, those who have been privileged to grow up in families and in social groups in which character and intellect are highly valued and in which the amenities of life are properly esteemed are, other things being equal, better fitted to enter the medical profession than are others less happily born and circumstanced. In the practice of medicine, particularly, good-breeding, good-taste, agreeable behavior, and "tact" (in the good sense of the word) are invaluable assets; those who lack them, unless they strive strenuously to overcome their deficiencies, are likely to have but a "sorry" time of it.

And, finally, an economic status that is not too restrictive would seem to be an indispensable qualification for entrance upon medical study and occupation. Billroth emphasized this and I believe with right. The prolonged period of education necessary for medicine, its cost, and the relatively late period in life in which the medical man becomes economically productive make it unwise, at least for most, to start in medicine if financially too greatly handicapped. For men of great promise, financial aid can usually, in one way or another, be procured; but for the mediocre man real poverty should point to some other vocation. Moreover, those who enter medicine from a state of poverty are, perhaps naturally, sometimes too prone later in life to think too much of money

and, if so, life is not likely to be satisfying to them. Certainly, experience has shown that "those who enter medicine to make money are seldom satisfied." [1]

2. **Preliminary Education.** — Nearly all medical schools in the United States now require two years of college work or its equivalent before admission. Some schools demand a college degree as pre-requisite to entrance, and even stipulate that the work toward that degree include laboratory work in physics, chemistry and biology as well as a reading knowledge of the French and German languages. The advantage of the full college course before entering the medical school lies in the wider culture it gives, but there is the disadvantage of postponement of the time when the actual work of medicine is begun. It seems probable that in the near future it will be possible through improvement in organization and teaching to secure an education corresponding to the full college course that can be completed one or two years earlier than has hitherto been feasible. The proportion of medical graduates with liberal arts degrees in 1910 was only 15.3%; by 1925 the proportion had risen to 61.2%. Those entering medicine with the expectation of becoming teachers or research workers should certainly secure a thorough grounding in physics, chemistry and biology before entering the medical school; those expecting to engage in general practice will be much helped by education in the liberal arts subjects before taking up medicine.

3. **Choice of a Medical School.**—A few years ago there were a great many inferior medical schools in the United States and Canada, but during the past two decades most of these have been weeded out, and at the

[1] *Cf.* Emmons, A. B., *The Profession of Medicine;* a collection of letters from graduates of the Harvard Medical School, Cambridge.

present time there are a large number of excellent medical schools among which the student may make a choice. This improvement has been brought about largely by the wise activities of the Council on Medical Education of the American Medical Association, of the Carnegie Foundation for the Advancement of Teaching, of the General Education Board, of the Association of American Medical Colleges, of the Rockefeller Foundation, and of a number of single medical educators of large influence and wide vision.

The number of medical schools was reduced from 162 in 1906 to 79 in 1926. The number of students in attendance in medical schools was reduced from 28,142 in 1904 to 12,930 in 1919, since when the number has increased gradually to 18,840 in 1926. The number graduating per years decreased from 5,747 in 1904 to 2,529 in 1922, since when it has increased to approximately 4,000 per year.

The student expecting to enter medicine should read the pamphlet published by the American Medical Association entitled, "Choice of a Medical School", in order to make sure that his choice shall be of a school recognized as Class A, since schools of Class B and Class C are unacceptable because of unexpert teachers, inadequately equipped laboratories, or insufficient provisions for clinical studies. As late as 1920 there were a large number of medical schools that fell into Class B and Class C, but by 1926 no less than 71 of the existing 79 medical schools in the United States belonged to Class A and 95% of the students were enrolled in these better schools. Only 61 of the 71 Class A schools gave the whole four-year course; the other 10 confined their teaching to the work of the first two years. A large proportion of the good schools are medical departments of State or privately endowed universities.

A student should try to enter the best medical school to which he can be admitted. By the "best" is meant the school with the ablest teachers, the best equipped laboratories, the most suitable hospitals, and the wisest policies of instruction. The cost of instruction, the cost of living in the place in which the medical school is situated, and the geographical relations with regard to the student's own home are further, but minor, considerations that must, of course, also be given due weight. The prospective medical student in doubt as to which school to select will do well to consult the professors of biology and chemistry in the college in which he prepares as well as some physician in whose judgment he places confidence.

Many of the best schools limit the numbers admitted each year, and it is, therefore, important to apply early for admission to the school decided upon as most desirable. Some 20,000 applications for admission to the medical schools of the United States and Canada were made (by about 8,900 persons) in 1926; of these some 6,400 were accepted for admission and about 5,200 were actually enrolled.[2]

4. **The Work of the Medical School.**—The work of the student in the medical school is divided between (1) studies in the pre-clinical sciences (anatomy, physiology, pharmacology and pathology), to which most of the first two years of the course is devoted, and (2) studies in the clinical sciences (medicine, surgery, obstetrics, and the medical and surgical specialties, including psychiatry, pediatrics, ophthalmology, otolaryngology, orthopedics, gynecology, urology, etc.), to which the second half of

[2] *Cf.* Myers, B. D., *Study of Disposition of Applicants for Admission to Schools of Medicine,* 1926-27. Bull. A. M. M. Coll., 1927, ii, 97-104.

the course is chiefly devoted. Courses in preventive medicine, in legal medicine, and in medical history are also offered in many schools.[3]

5. **Medical Licensure.**—In addition to securing his medical degree, the physician must pass the examination of a State Licensing Board before he is permitted to practise. Formerly the requirements of the boards of different states varied greatly; recently there has been a tendency to greater uniformity, a tendency strongly aided by the Federation of State Medical Boards. Reciprocity now exists among several states, licence in one satisfying the requirements in others. It is now possible by passing the said examination of a National Licensing Board to meet the requirements of any State in the Union.

In the future there may be different requirements for licensure to enter upon general practice and for licensure for entrance upon practice as a specialist; thus far the

[3] *Cf.* Flexner (A) Medical Education in the United States and Canada. Bulletin No. 4 of the Carnegie Foundation for the Advancement of Teaching, New York, 1910. Also: Medical Research and Education, by R. M. Pearce, Wm. H. Welch (and others) 8° N. Y. and Garrison, N. Y., 1913. Also: Osler, W., The Student Life; farewell address to Canadian and American Medical students, 8° Oxford, 1905. Also: Bickel, A., Wie Studiert man Medizin? Stuttgart, 1906. Also: Newmann, Sir G., Recent Advances in Medical Education in England. London, 1923. Also: Barker, L. F., Medicine and Universities, Am. Med., Phila., 1902, iv, 143-147; Tendencies in Medical Education in the United States, J. Am. M. Ass., Chicago, 1911, lvii, 613-621; Relation of Preclinical Laboratory Courses to Work of Clinical Years, *Ibid.*, 1916, lxvi, 631-635. Also: Welch, W. H., Medical Education in the United States. Harvey Lect., 1915-16, Phila. & Lon., 1917, 366-382. Also: Wilbur, R. L., Needs and Future of Medical Education, Am. M. Ass. Bull., Chicago, 1920-21, xiv, 21-32. Also: Vincent, G. E., Ideals and their Function in Medical Education, J. Am. M. Ass., Chicago, 1920, lxxiv, 1065-1068.

difficulties of so-called "differential licensure" have prevented the adoption of this dual system.[5]

6. **Rural and Urban Distribution of Medical Practitioners.**—In considering where to practise, the young medical graduate should bear in mind that there is, at present, an outspoken drift of physicians to urban communities and away from the rural districts, owing to the larger economic rewards of practice in the cities, the increased tendency to specialization in practice, and the greater facilities for hospitalization, for laboratory examinations and for co-operation with consultants in the urban centres.[6] The problem of supplying adequate medical services to rural as well as to urban communities presents genuine difficulties that demand the best thought of medical statesmen for satisfactory solution.[6]

7. **Cost of Medical Care.**—The rapid advance in medical knowledge and technique and the necessity, in more obscure cases, of the participation of a number of specialists in the making of a general diagnostic survey and often, too, in the execution of desirable treatment has made the cost of adequate medical care a pressing problem, especially for people of moderate means as well as for the poor. Attempts of various sorts have been and are being made to lessen the cost to the consumer in general as well as to arrange for the proper care of consumers of medical services whose means would not be sufficient even if costs could be markedly reduced. A Committee on the Cost of Medical Services (with an

[4] *Cf. Preliminary Report of Commission on Medical Education,* Willard C. Rappleye, Director of Study, New Haven, 1927.

[5] *Cf.* Smith, H. G., and Warnshuis, F. C., "The Distribution of Physicians in Relation to Population; a Statistical Survey and Study Covering Ten Years," *Journal Michigan State Med. Soc.,* 1926.

[6] *Cf.* Weiskotten, H. G., "Present Tendencies in Medical Practice." *Bull. Ass. Am. Med. Coll.,* 1927, ii, 29-47.

economist, H. H. Moore, as director of studies and President R. L. Wilbur of Leland Stanford University as Chairman) has recently begun the study of the problems involved in this connection.

8. **Postgraduate Medical Education.**—A large proportion of young men pursue their medical studies further immediately after graduation and before entrance upon private practice. A hospital interneship for from one to three years is a favorite method; the experience gained gives great advantages in running medical careers to those securing such positions. Those preparing for medical teaching or for medical research usually associate themselves immediately or soon after graduation with masters in their chosen subjects for a few years of postgraduate work. Fellowships and posts in whole-time teaching departments yield honoraria that make it possible for young men of small means to pursue higher studies in medicine.

For those who have already engaged in private practice and who desire to return to medical centres for extension of their knowledge and skill, excellent opportunities are provided both in this country and abroad.[4]

9. **Helpful Reading.**—For those thinking of a medical career as well as those already entered upon it, the perusal of the following volumes may be heartily recommended in addition to the writings referred to in footnotes on preceding pages:

[4] *Cf.* Physicians' Courses in Hospitals and Graduate Medical Schools, J. Am. Med. Ass., Chicago, 1927, lxxxviii, 832-835. Also Wilson, L. B., Status of Graduate Medical Education in the United States, 1922-3, Jour. Am. M. Ass., Chicago, 1923, lxxx, 790-722; European Medicine and Medical Education with Special Reference to Conditions Existing in Italy, Internat. Clin., Phila., 1926, iii, 261-276. Also Flexner, A., Postgraduate Education, in his Medical Education in Europe, Bulletin No. 6 of Carnegie Foundation for the Advancement of Teaching, New York, 1912.

BERNARD, CLAUDE. *An Introduction to the Study of Experimental Medicine.* Eng. Transl. by H. C. Greene, with an Introduction by L. J. Henderson, New York, The Macmillan Co., 1927.

BILLROTH, THEODOR. *The Medical Sciences in the German Universities; a Study in the History of Civilization.* Eng. Transl.; with an Introduction by W. H. Welch, New York, The Macmillan Co., 1924.

CABOT, RICHARD C. *Training and Rewards of the Physician,* Philadelphia and London. J. B. Lippincott Co., 1918.

CAMAC, CHARLES N. B. *Counsels and Ideals from the Writings* of Wm. Osler, 8° Boston, 1905.

CUSHING, HARVEY W. *Life of Sir William Osler.* 2 v. New York. Oxford Press, 1925.

FINNEY, J. M. T. *The Physician.* New York, Scribners, 1923.

FLEXNER, ABRAHAM. *Medical Education; a Comparative Study,* New York, Macmillan Co., 1925.

GARRISON, FIELDING H. *An Introduction to the History of Medicine, with Medical Chronology, Suggestions for Study and Bibliographic Data.* Second edition. Philadelphia and London, W. B. Saunders Company, 1917.

HONIGMANN, GEORG. *Das Wesen der Heilkunde; historischgenetische Einführung in die Medizin,* Leipzig, F. Meiner, 1924.

NEUBURGER, M. *History of Medicine,* 2 v., New York, Oxford Press, 1925.

VALLERY-RADOT, R. *Life of Pasteur,* Eng. Transl. 2 v., London, 1911.

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